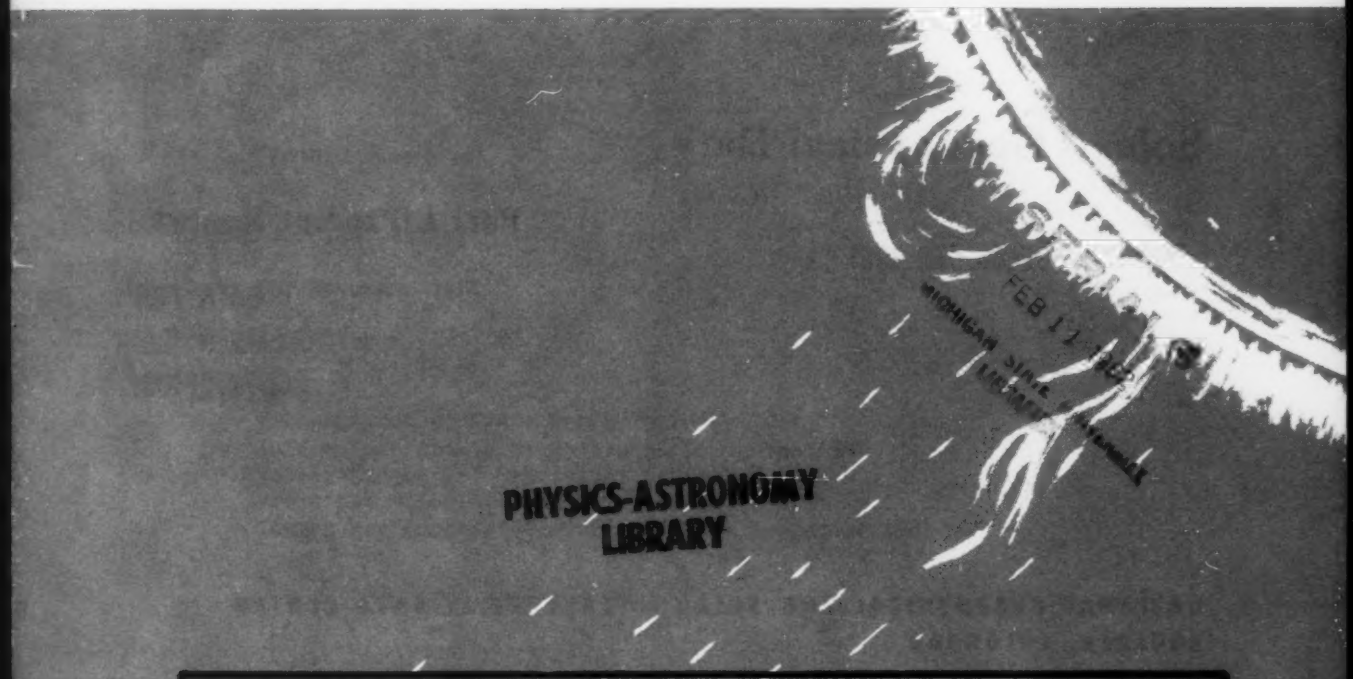
DECEMBER 1981 NUMBER 448 -- Part I

Solar-Geophysical Data prompt reports

Data for November 1981, October 1981 & Late Data
Explanation of Data Reports Issued as Number 438 (Supplement) February 1981



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Solar - Geophysical Data

Part I (Prompt Reports)

NO. 448 DECEMBER 1981

DATA FOR
NOVEMBER 1981
OCTOBER 1981

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SOLAR-GEOPHYSICAL DATA

No. 448

Issued in two parts

Helen E. Coffey, Editor

Joe H. Allen, Chief
Solar-Terrestrial Physics Division

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		1980 Nov	Dec	1981 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct		
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A.1	Sunspot Drawings	437A 60	438A 44	439A 46	440A 52	441A 58	442A 52	443A 44	444A 52	445A 54	446A 40	447A 54	448A 52		
A.2a	Zurich Provisional Relative Sunspot Numbers Rz	436A 11	437A 11	---	---	---	---	---	---	---	---	---	---	---	
A.2aa	International Provisional Relative Sunspot Numbers R_I			438A 11	439A 9	440A 11	441A 13	442A 11	443A 9	444A 11	445A 11	446A 11	447A 11	448A 11	
A.2b	Zurich Final Sunspot Numbers Rz	440A 10	440A 10	---	---	---	---	---	---	---	---	---	---	---	
A.2c	American Relative Sunspot Numbers Ra	436A 11	437A 11	438A 11	439A 9	440A 11	441A 13	442A 11	443A 9	444A 11	445A 11	446A 11	447A 11	448A 11	
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A.3c	Kitt Peak Magnetograms	437A 60	438A 44	439A 46	440A 52	441A 58	442A 52	443A 44	444A 52	445A 54	446A 40	447A 54	448A 52		
A.3d	Mean Solar Magnetic Field (Stanford)	436A 42	437A 48	438A 36	439A 38	440A 46	441A 50	442A 44	443A 38	444A 46	445A 47	446A 34	447A 46	448A 44	
A.3e	Stanford Magnetograms	437A 60	438A 44	439A 46	439A 52	441A 58	442A 52	443A 44	444A 52	445A 54	446A 40	447A 54	448A 52		
A.4	H-alpha Filtergrams	437A 60	438A 44	439A 46	440A 52	441A 58	442A 52	443A 44	444A 52	445A 54	446A 40	447A 54	448A 52		
A.5	Calcium Plage Drawings - Mt. Wilson or Big Bear	437A 60	438A 44	439A 46	440A 52	441A 58	442A 52	443A 44	444A 52	445A 54	446A 40	447A 54	448A 52		
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A.5b	Mt. Wilson Daily Calcium Plage Indices	437A134	438A121	439A123	440A121	441A135	442A127	443A119	444A122	445A129	447A175	447A128			
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A.6b	Synoptic Chart and Active Regions (Paris)	444B 52	444B 54	444B 56	444B 58	446B 79	447B 76	448B 40							
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A.6d	Kitt Peak Solar Magnetic Field Synoptic Charts	437A 56	438A 42	439A 44	440A 50	441A 56	442A 50								
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A.7g	Helium Synoptic Maps (KPNO)	437A 58	438A 43	439A 45	440A 51	441A 57									
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A.8aa	2800 MHz - Daily Values of Solar Flux (ARO-Ottawa)	436A 11	437A 11	438A 11	439A 9	440A 11	441A 13	442A 11	443A 9	444A 11	445A 11	446A 11	447A 11	448A 11	
A.8ac	2800 MHz - Daily Values of Adj. Solar Flux (ARO-Ottawa)	436A 11	437A 11	438A 11	439A 9	440A 11	441A 13	442A 11	443A 9	444A 11	445A 11	446A 11	447A 11	448A 11	
A.8g	Daily Values of Adjusted Solar Flux (AFGL)	436A 11	437A 11	438A 11	439A 9	440A 11	441A 13	442A 11	443A 9	444A 11	445A 11	---	447A 11	448A 11	
A.10a	169 MHz - Interferometric Observations (Nancay)	438A160	438A161	439A154	439A 24	440A 29	442A160	442A 27	443A 23	444A 27	445A 27	446A 20	447A 28	448A 25	
A.10c	21 cm East-West Solar Scans (Fleurs)	436A 29	437A 34	438A 24	439A 27	440A 32	441A 33	442A 30	443A 26	444A 30	445A 30	446A 23	447A 32	448A 28	
A.10d	43 cm East-West Solar Scans (Fleurs)	436A 30	437A 35	438A 25	439A 28	440A 33	441A 34	442A 31	443A 27	444A 31	445A 31	446A 24	447A 33	448A 29	
A.10e	10.7 cm East-West Solar Scans (Ottawa-ARO)	436A 28	437A 33	438A 23	439A 26	440A 31	441A 32	442A 29	443A 25	444A 29	445A 29	446A 22	447A 31	448A 27	
A.10f	3 cm East-West Solar Scans (Toyokawa)	436A 27	437A 32	438A 22	439A 25	440A 30	441A 31	442A 28	443A 24	444A 28	445A 30	---	447A 29	448A 26	
A.10g	8 cm East-West Solar Scans (Toyokawa)											446A 21	447A 30	---	
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A.13e	Solar Plasma (IMP H & J)	443B 67													
A.13f	Solar Wind (Pioneer 12 (Venus))	436A 43	437A 45	438A 37	442A170	442A170	442A171	442A 45	443A 39	444A 47	445A 45	446A 31	447A 43	448A 41	
A.17	Interplanetary Magnetic Field (Pioneer 12)	438A162	438A125	439A127	440A153	---	---	---	444A126	445A135	446A107	447A129			
A.17c	Inferred IP Magnetic Field	436A 40	437A 46	438A 34	439A 36	440A 44	441A 48	442A 42	443A 36	444A 44	445A 46	446A 32	447A 44	448A 42	
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B.53	Quality Figures Based on Frequency Ranges	437A169	438A155	439A152	440A156	443A166	442A158	443A149	444A150	445A165	446A139	447A158	448A156		
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C.1a	Optical Observations Flares	436A 16	437A 16	438A 16	439A 14	440A 18	441A 18	442A 16	443A 15	444A 16	445A 16	446A 16	447A 16	448A 16	
C.1ba	Optical Observations Flares (Standardized Data)	442B 44	443B 28	445B 60	447B 44										
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C.1d	Flare Patrol Observations	442B 82	443B 59	445B 90	448B 42										
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C.4d	Solar Radio Spectral Obs. (Culgoora)	437A139	438A126	439A128	440A126	441A136	443A154	443A123	444A127	445A136	446A108	447A130			
C.4e	Solar Radio Spectral Obs. (Weissenau)	438A126	439A128	440A126	441A136	442A134	443A123	445A174	445A136	445A136	446A108	447A130	448A134		
C.4f	Solar Radio Spectral Obs. (Sagamore Hill)	437A139	438A126	439A128	440A126	441A136	442A134	443A123	444A127	445A136	446A108	447A130	448A134		
C.4h	Solar Radio Spectral Obs. (Dwingeloo)	437A139	438A126	439A128	440A126	441A136	442A134	443A123	444A127	445A136					
C.4i	Solar Radio Spectral Obs. (Bleien)	437A139	438A126	439A128	440A126	441A136	442A134	443A123							
C.4j	Solar Radio Spectral Obs. (Manila)														
C.4k	Solar Radio Spectral Obs. (Learmonth)	437A139	438A126	439A128	440A126	441A136	442A134	443A123	444A127	445A136	446A108	447A130	448A134		
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C.5e	Solar X-ray (SMS/GOES) (graphs)	441B 46	442B 36	443B 20	444B 43	445B 51	446B 69	447B 34	448B 31						
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D.1a	Geomagnetic Indices Kp, Km, Ks, Km, Ap, aa, Cp	437A163	438A149	439A145	440A149	441A162	443A164	443A144	444A144	445A160	446A135	447A152	448A150		
D.1ba	27-day Chart of Kp Indices	437A165	438A151	439A147	440A151	441A164	442A153	443A146	444A146	445A162	446A137	447A154	448A152		
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D.1d	Principal Magnetic Storms	437A168	438A154	439A148	440A152	441A166	442A155	443A147	444A147	445A163	447A180	448A164			
D.1e	Reduced Magnetograms														
D.1f	Sudden Commencement and Solar Flare Effects	437A169	439A163	439A149	441A170	442A180	443A165	443A148	445A180	445A164	446A138	447A155	448A153		
D.1g	Equatorial Indices Dst	437A167	438A153	440A160	441A172	442A182	444A155	445A182	445A183	446A144	447A179	448A163			
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F.1b	Cosmic Ray Neutron Counts (Climax)	438A163	438A163		440A159	442A177	442A151	443A141	445A178	447A176	447A177	447A151			
F.1e	Cosmic Ray Neutron Counts (Alert)	438A163	439A162	440A159	440A145	442A177	442A151	444A152	447A176	447A176	447A177	447A151	448A149		
F.1h	Cosmic Ray Neutron Counts (Thule)	437A162	438A148	439A144	440A145	441A159	442A151	443A141	444A141	445A157	446A134	447A151	448A149		
F.1i	Cosmic Ray Neutron Counts (Kiel)	437A162	438A148	439A144	440A145	441A159	442A151	443A141	444A141	445A157	447A177	447A151	448A149		
F.1j	Cosmic Ray Neutron Counts (Tokyo)	437A162	438A148	439A144	440A145	441A159	442A151	443A141	444A141	445A157	447A177	447A151	448A149		
F.1l	Cosmic Ray Neutron Counts (Huancayo)	439A162	439A162	442A177	442A177	442A177	443A163	443A141	445A178	447A176	447A177	447A151			
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H.60	IUWDS Alert Decisions	436A 5	437A 5	438A 5	439A 4	440A 5	441A 5	442A 5	443A 5	444A 5	445A 5	446A 4	447A 4	448A 4	

Notes:

"437A 60" listed under 1980 Nov means that the sunspot drawings for Nov 1980 were contained in *Solar-Geophysical Data* Number 437 - Part I, beginning on page 60.

A = Part I, B = Part II.

----- = no data available.
blank = data not yet received.

SGD 448 Part I (Prompt)

NOVEMBER 1981 DATA

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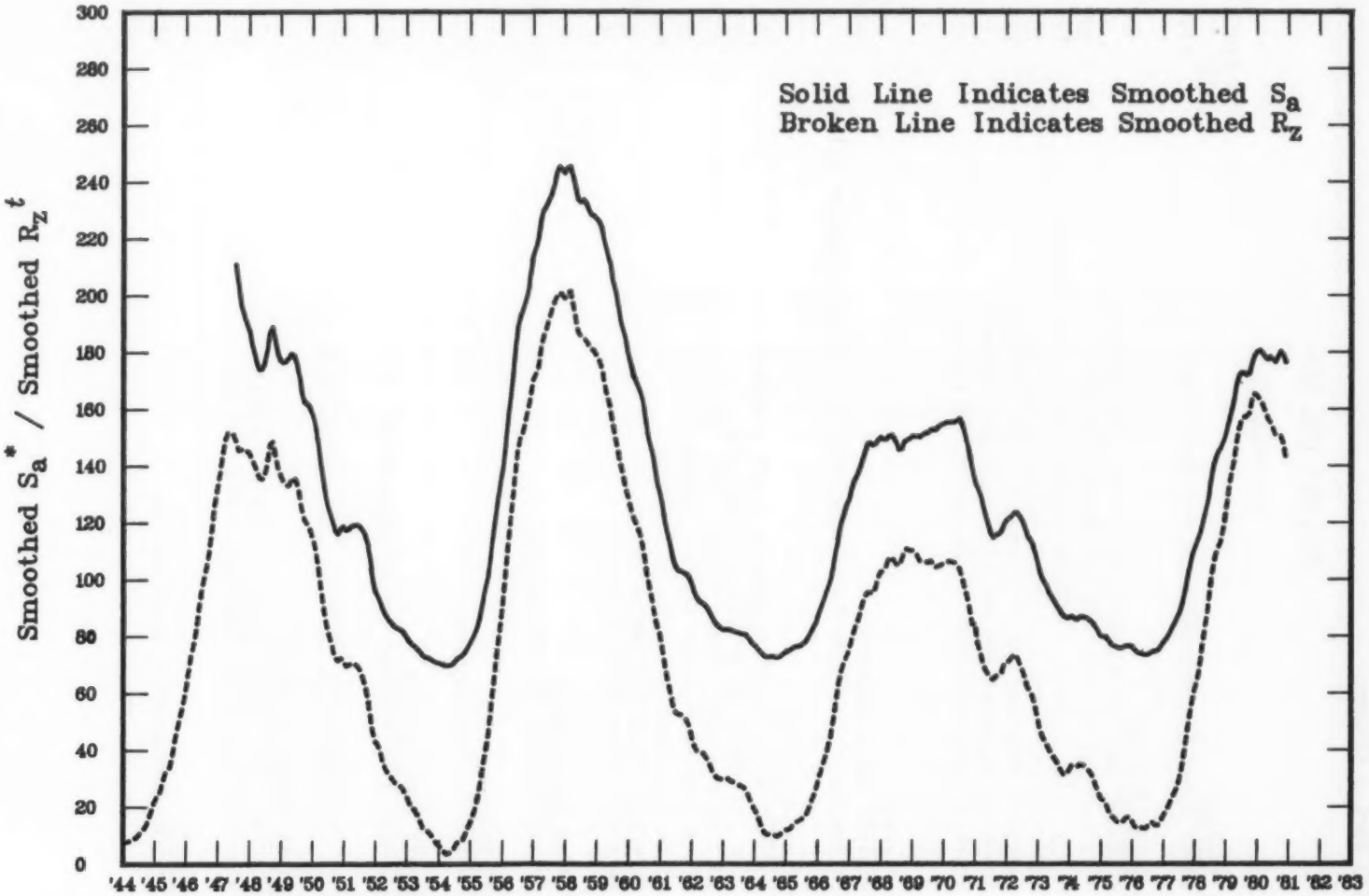
Superposition of Zürich Sunspot Numbers and Ottawa 10.7 cm Flux
January 1944 – December 1980



* Solar Flux Units (10^{-22} W/m^2 Hz) Adjusted to 1 A.U., Series D.
t Reduced Zürich Sunspot Numbers.

ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

NOVEMBER 1981

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	Flares: Total	Flares: M	Flares: X	Outstanding events	Forecasts: Date	Forecasts: Location Lat-Long	Forecasts: Desc*	Alert Situations
305	01	31	224	210	006	N16W65	0	0	0		01	N16W65	Q	SOLQUIET
						S01W45	0	0	0			S01W45	Q	MAGQUIET
						N12W40	0	0	0			N12W40	Q	
						N12W22	2	0	0			N12W22	Q	
						N15W18	1	0	0			N15W18	Q	
						N07W04	0	0	0			N07W04	Q	
						N13W04	3	0	0			N13W04	Q	
						S22E19	1	0	0			S22E19	Q	
						N15E20	3	0	0			N15E20	E	
						N28E27	1	0	0			N28E27	Q	
						S07E34	0	0	0			S07E34	Q	
						S12E51	6	0	0			S12E51	E	
						N19E71	0	0	0			N19E71	Q	
306	02	01	301	232	008	N15W79	0	0	0		02	N15W79	Q	SOLALERT 02
						S23W52	0	0	0			S23W52	Q	MAGQUIET
						N10W51	0	0	0			N10W51	Q	
						N11W35	2	0	0			N11W35	Q	
						N14W31	0	0	0			N14W31	Q	
						N13W18	0	0	0			N13W18	Q	
						N08W17	0	0	0			N08W17	Q	
						S03W09	0	0	0			S03W09	Q	
						S22E07	3	0	0			S22E07	E	
						N15E08	2	0	0			N15E08	E	
						N28E14	0	0	0			N28E14	Q	
						S07E21	0	0	0			S07E21	Q	
						S12E37	13	1	0			S12E37	A	
						N14E52	0	0	0			N14E52	Q	
						N19E56	0	0	0			N19E56	Q	
						N04E76	0	0	0			N04E76	Q	
						S04E84	0	0	0			S04E84	Q	
307	03	02	390	247	006	S23W68	0	0	0		03	S23W68	Q	SOLALERT MINOR 03/XX
						N07W61	0	0	0			N07W61	Q	MAGQUIET
						N11W48	0	0	0			N11W48	Q	
						N15W44	0	0	0			N15W44	Q	
						N19E43	0	0	0			N19E43	Q	
						S08W41	0	0	0			S08W41	Q	
						N08W29	0	0	0			N08W29	Q	
						S03W22	0	0	0			S03W22	Q	
						S21W07	2	0	0			S21W07	Q	
						N15W05	2	0	0			N15W05	Q	
						N28E01	0	0	0			N28E01	Q	
						S08E08	0	0	0			S08E08	Q	
						N12E11	0	0	0			N12E11	Q	
						S12E22	13	0	0			S12E22	E	
						N16E37	0	0	0			N16E37	Q	
						N03E61	0	0	0			N03E61	Q	
						N05E67	0	0	0			N05E67	Q	
						S04E69	0	0	0			S04E69	Q	
						N05E73	0	0	0			N05E73	Q	
						S16E74	0	0	0			S16E74	Q	
308	04	03	380	262	007	N09W62	2	0	0		04	N09W62	Q	SOLALERT MINOR 04/06
						N16W57	5	0	0			N16W57	Q	MAGQUIET
						S15W56	0	0	0			S15W56	Q	
						S03W38	0	0	0			S03W38	Q	
						S10W28	0	0	0			S10W28	Q	
						S22W19	6	0	0			S22W19	Q	
						N16W18	1	0	0			N16W18	Q	
						N29W13	1	0	0			N29W13	Q	
						S07W05	0	0	0			S07W05	Q	
						N11W01	0	0	0			N11W01	Q	
						N18E04	0	0	0			N18E04	Q	
						S12E11	8	0	0			S12E11	A	
						N14E24	0	0	0			N14E24	Q	
						N20E30	0	0	0			N20E30	Q	
						N04E46	0	0	0			N04E46	Q	
						S04E55	0	0	0			S04E55	Q	
						N05E60	0	0	0			N05E60	Q	
						S16E62	1	0	0			S16E62	Q	
309	05	04	384	270	005	N08W84	0	0	0		05	N08W84	Q	SOLALERT MINOR 05/06
						N09W79	1	0	0			N09W79	Q	MAGQUIET
						S13W69	0	0	0			S13W69	Q	
						N17W69	2	0	0			N17W69	Q	
						S02W51	0	0	0			S02W51	Q	
						S10W43	0	0	0			S10W43	Q	
						S22W32	1	0	0			S22W32	Q	
						N17W31	0	0	0			N17W31	Q	
						N29W27	0	0	0			N29W27	Q	
						S07W18	0	0	0			S07W18	Q	
						N11W13	0	0	0			N11W13	Q	
						S10W03	18	2	0			S10W03	A	
						N14E11	0	0	0			N14E11	Q	
						N20E17	0	0	0			N20E17	Q	
						N04E32	0	0	0			N04E32	Q	
						S04E41	0	0	0			S04E41	Q	
						N05E47	0	0	0			N05E47	Q	
						S16E48	1	0	0			S16E48	Q	
						S21E76	1	0	0			S21E76	Q	

NOTE: PRESTO Messages (The Rapid Report of Major Events) for November 1981 are on page 9.

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

SUMMARY OF THE GEOALERT WWA MESSAGES — NOVEMBER 1981

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	No. of Flares: Total	M	X	Outstanding events	Forecasts: Date	Location Lat-Long	Desc*	Alert Situations
310	06	05	335	259	014	N16W84	0	0	0	Presto Tenflare	06	N16W84	Q	SOLALERT 06/06
						S03W63	0	0	0	170 Flux Units		S03W63	Q	MAGQUIET
						S11W58	0	0	0	05/0211Z Duration		S11W58	Q	
						S22W46	0	0	0	5 Minutes.		S22W46	Q	
						N17W45	1	0	0			N17W45	Q	
						N29W40	0	0	0			N29W40	Q	
						S06W32	0	0	0			S06W32	Q	
						N11W23	0	0	0			N11W23	Q	
						S10W17	10	1	0			S10W17	A	
						N13W02	0	0	0			N13W02	Q	
						N19E04	0	0	0			N19E04	Q	
						N09E19	0	0	0			N09E19	Q	
						S04E28	0	0	0			S04E28	Q	
						N04E33	0	0	0			N04E33	Q	
						S16E33	0	0	0			S16E33	Q	
						S21E61	4	0	0			S21E61	Q	
						N16E74	0	0	0			N16E74	Q	
						S19E77	0	0	0			S19E77	Q	
311	07	06	297	249	011	N15W97	0	0	0		07	N15W97	Q	SOLALERT 07
						S03W75	0	0	0			S03W75	Q	MAGQUIET
						N16W58	1	0	0			N16W58	Q	
						S22W58	0	0	0			S22W58	Q	
						N28W54	1	0	0			N28W54	Q	
						S06W45	0	0	0			S06W45	Q	
						N12W41	0	0	0			N12W41	Q	
						S10W32	13	0	0			S10W32	A	
						N14W16	1	0	0			N14W16	Q	
						N20W09	0	0	0			N20W09	Q	
						N04E04	0	0	0			N04E04	Q	
						S04E15	0	0	0			S04E15	Q	
						N08E18	0	0	0			N08E18	Q	
						S16E21	6	0	0			S16E21	Q	
						S20E48	3	0	0			S20E48	Q	
						N17E58	0	0	0			N17E58	Q	
						S19E61	0	0	0			S19E61	Q	
312	08	07	326	246	018	S22W74	0	0	0	Presto Tenflare	08	S22W74	Q	SOLNIL
						N16W72	1	0	0	170 Flux Units		N16W72	Q	MAGQUIET
						N28W67	0	0	0	07/0354Z Duration		N28W67	Q	
						S08W58	0	0	0	7 Minutes		S08W58	Q	
						S10W44	9	1	0			S10W44	A	
						N14W30	0	0	0			N14W30	Q	
						N19W21	0	0	0			N19W21	Q	
						N04W08	0	0	0			N04W08	Q	
						S04E04	0	0	0			S04E04	Q	
						N03E05	0	0	0			N03E05	Q	
						S15E08	5	0	0			S15E08	E	
						S21E36	5	0	0			S21E36	E	
						N18E46	0	0	0			N18E46	Q	
						S19E49	1	0	0			S19E49	Q	
						N04E50	0	0	0			N04E50	Q	
						N25E55	0	0	0			N25E55	Q	
						N17E57	1	0	0			N17E57	Q	
313	09	08	248	245	025	S22W88	0	0	0	Presto Tenflare	09	S22W88	Q	SOLQUIET
						N16W86	1	0	0	100 Flux Units		N16W86	Q	MAGQUIET
						N28W80	0	0	0	18/0357Z Duration		N28W80	Q	
						S10W55	3	0	0	9 Minutes		S10W55	A	
						N14W43	0	0	0			N14W43	Q	
						N20W36	0	0	0			N20W36	Q	
						S04W11	3	0	0			S04W11	Q	
						S15W06	2	0	0			S15W06	E	
						S20E22	5	1	0			S20E22	E	
						N03E31	1	0	0			N03E31	Q	
						N17E32	0	0	0			N17E32	Q	
						S17E35	5	0	0			S17E35	Q	
						N15E42	0	0	0			N15E42	Q	
						N17E73	0	0	0			N17E73	Q	
314	10	09	223	237	010	N29W94	1	0	0	Presto Tenflare	10	N29W94	Q	SOLQUIET
						S09W73	4	0	0	1485 Flux Units		S09W73	E	MAGALERT MINOR 10
						S04W25	0	0	0	09/1313Z Duration		S04W25	Q	
						N05W23	0	0	0	30 Minutes		N05W23	Q	
						S15W21	5	0	0			S15W21	E	
						S19E09	8	2	0			S19E09	A	
						N03E18	1	0	0			N03E18	Q	
						N18E18	5	0	0			N18E18	E	
						S19E22	3	0	0			S19E22	E	
						N15E27	0	0	0			N15E27	Q	
						N13E42	0	0	0			N13E42	Q	
						N18E61	1	0	0			N18E61	Q	
						S12E67	0	0	0			S12E67	Q	
315	11	10	219	226	014	S09W85	10	0	0		11	S09W85	E	>OLQUIET
						S04W37	0	0	0			S04W37	Q	MAGNIL
						S15W35	1	0	0			S15W35	Q	
						N18W17	0	0	0			N18W17	Q	
						S20W03	5	0	0			S20W03	E	
						N03E04	1	0	0			N03E04	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

NOVEMBER 1981

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	Active Regions: No. of Flares: Total	Active Regions: No. of Flares: M	Active Regions: No. of Flares: X	Outstanding events	Forecasts: Date	Forecasts: Location Lat-Long	Forecasts: Desc*	Alert Situations
						N18E05	4	0	0			N18E05	E	
						S19E08	1	0	0			S19E08	Q	
						N16E14	0	0	0			N16E14	Q	
						N14E28	0	0	0			N14E28	Q	
						N18E48	1	0	0			N18E48	Q	
						S12E54	1	0	0			S12E54	Q	
316	12	11	237	221	030	S04W51	0	0	0		12	S04W51	Q	SOLQUIET
						S14W50	0	0	0			S14W50	Q	MAGALERT MINOR 12
						N19W30	0	0	0			N19W30	Q	
						S19W16	3	0	0			S19W16	E	
						N03W10	4	0	0			N03W10	Q	
						N18W08	8	0	0			N18W08	E	
						S17W07	1	0	0			S17W07	Q	
						N16E00	0	0	0			N16E00	Q	
						N18E34	12	0	0			N18E34	Q	
						S13E40	1	0	0			S13E40	Q	
317	13	12	221	228	030	S04W64	0	0	0	Presto Soflare	13	S04W64	Q	SOLALERT 13/14
						S14W63	1	0	0	X1/1B N17W10		S14W63	Q	MAGNIL
						S19W30	3	0	0	12/1543Z Duration		S19W30	E	
						N02W23	3	0	0	40 Minutes		N02W23	E	
						N18W20	12	0	1			N18W20	A	
						S18W18	1	0	0			S18W18	Q	
						N15W11	0	0	0			N15W11	Q	
						N13W03	0	0	0			N13W03	Q	
						N12E06	1	0	0			N12E06	Q	
						S17E22	5	1	0			S17E22	Q	
						S12E26	2	0	0			S12E26	Q	
						S04E82	3	0	0			S04E82	E	
318	14	13	217	221	005	S04W78	1	0	0		14	S04W78	Q	SOLALERT 14/16
						S15W77	2	0	0			S15W77	Q	MAGQUIET
						S19W45	6	0	0			S19W45	E	
						N03W37	8	0	0			N03W37	Q	
						N18W33	19	7	0			N18W33	A	
						S19W32	0	0	0			S19W32	Q	
						N13W17	0	0	0			N13W17	Q	
						N12W07	0	0	0			N12W07	Q	
						N17E09	7	0	0			N17E09	E	
						S12E12	0	0	0			S12E12	Q	
						S04E69	7	1	0			S04E69	E	
319	15	14	276	212	018	S14W93	0	0	0	Presto Soflare	15	S14W93	Q	SOLALERT 15/17
						S04W91	0	0	0	M5/1B N15W46		S04W91	Q	MAGALERT MINOR 15
						S18W57	4	0	0	14/2209Z Duration		S18W57	E	
						S04W55	4	1	0	34 Minutes. Tenflare		S04W55	A	
						N03W52	12	0	0	840 Flux Units		N03W52	Q	
						N18W47	6	1	0	14/2209Z Duration		N18W47	A	
						S15W45	0	0	0	27 Minutes.Tenflare		S15W45	Q	
						N14W32	0	0	0	1000 Flux Units		N14W32	Q	
						N12W21	1	0	0	14/2153Z Duration		N12W21	Q	
						N18W04	7	1	0	60 Minutes.		N18W04	E	
						S13W01	0	0	0	Magstorm 14/0536Z		S13W01	Q	
						S18E11	0	0	0			S18E11	Q	
						N13E14	0	0	0			N13E14	Q	
						S04E67	0	0	0			S04E67	Q	
320	16	15	218	196	016	S18W72	2	0	0	Presto Tenflare	16	S18W72	E	SOLALERT 16/XX
						N02W67	2	0	0	260 Flux Units		N02W67	Q	MAGALERT MINOR 16/XX
						N19W58	5	0	0	15/0135Z Duration		N19W58	A	
						N14W46	1	0	0	1 Minute.Tenflare		N14W46	Q	
						S15W39	0	0	0	100 Flux Units		S15W39	Q	
						N12W35	0	0	0	15/0134Z Duration		N12W35	Q	
						N18W17	2	0	0	12 Minutes. Soflare		N18W17	E	
						S12W13	0	0	0	M3/2B S06E60		S12W13	Q	
						S20W05	0	0	0	15/1419Z Duration		S20W05	Q	
						N13W01	0	0	0	16 Minutes.Tenflare		N13W01	Q	
						S04E41	4	0	0	260 Flux Units		S04E41	A	
						S05E53	2	1	0	Duration 9 Minutes		S05E53	Q	
321	17	16	179	185	015	S19W84	0	0	0		17	S19W84	E	SOLALERT17
						N03W82	0	0	0			N03W82	Q	MAGALERT MINOR 17
						N19W73	4	0	0			N19W73	A	
						N14W60	0	0	0			N14W60	Q	
						S14W51	0	0	0			S14W51	Q	
						N12W48	1	0	0			N12W48	Q	
						N18W31	2	0	0			N18W31	E	
						S11W29	0	0	0			S11W29	Q	
						S04E27	2	0	0			S04E27	A	
						S18E35	0	0	0			S18E35	Q	
						S05E38	1	0	0			S05E38	Q	
322	18	17	202	177	024	N03W93	0	0	0		18	N03W93	Q	SOLNIL
						N20W83	11	0	0			N20W83	E	MAGALERT 18
						N14W73	0	0	0			N14W73	Q	
						S14W65	7	0	0			S14W65	Q	
						N13W61	0	0	0			N13W61	Q	
						N19W44	1	0	0			N19W44	Q	
						S12W44	0	0	0			S12W44	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

NOVEMBER 1981

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions				Outstanding events	Forecasts			Alert Situations
						Location	No. of Flares				Date	Location	Desc*	
						Lat-Long	Total	M	X			Lat-Long		
						S17W22	3	0	0			S17W22	Q	
						N03W07	0	0	0			N03W07	Q	
						S04E14	0	0	0			S04E14	E	
						S04E22	2	0	0			S04E22	Q	
						S19E24	0	0	0			S19E24	Q	
						S18E48	0	0	0			S18E48	Q	
						N10E52	0	0	0			N10E52	Q	
323	19	18	145	167	022	S16W78	6	0	0	Presto Tenflare	19	S16W78	Q	SOLQUIET
						N17W58	1	0	0	110 Flux Units		N17W58	Q	MAGNIL
						S17W35	6	1	0	18/0411Z Duration		S17W35	E	
						N03W20	0	0	0	10 Minutes		N03W20	Q	
						S04W01	7	0	0			S04W01	E	
						S06E08	0	0	0			S06E08	Q	
						S21E11	0	0	0			S21E11	Q	
						N13E23	0	0	0			N13E23	Q	
						S18E32	0	0	0			S18E32	Q	
						N10E36	0	0	0			N10E36	Q	
324	20	19	150	161	012	S16W90	0	0	0		20	S16W90	Q	SOLQUIET
						N17W72	1	0	0			N17W72	Q	MAGQUIET
						S17W49	5	0	0			S17W49	E	
						S05W16	3	0	0			S05W16	Q	
						S07W02	0	0	0			S07W02	Q	
						N13E10	0	0	0			N13E10	Q	
325	21	20	120	156	015	N18W84	0	0	0		21	N18W84	Q	SOLQUIET
						S17W62	3	1	0			S17W62	E	MAGQUIET
						S07W52	0	0	0			S07W52	Q	
						S05W29	0	0	0			S05W29	Q	
						S06W16	0	0	0			S06W16	Q	
						N13W04	5	0	0			N13W04	E	
						S17E10	0	0	0			S17E10	Q	
326	22	21	102	157	014	S17W77	7	0	0		22	S17W77	E	SOLQUIET
						S05W66	0	0	0			S05W66	Q	MAGQUIET
						S06W35	3	0	0			S06W35	A	
						N13W17	2	0	0			N13W17	E	
						N10E54	0	0	0			N10E54	Q	
						N16E69	0	0	0			N16E69	Q	
327	23	22	132	157	012	S17W86	7	1	0	Presto Tenflare	23	S17W86	E	SOLQUIET
						S06W78	0	0	0	150 Flux Units		S06W78	Q	MAGQUIET
						S04W52	4	1	0	22/0322Z Duration		S04W52	E	
						S17W47	0	0	0	8 Minutes. Tenflare		S17W47	Q	
						N13W31	8	1	0	160 Flux Units		N13W31	E	
						N21E04	0	0	0	22/0656Z Duration		N21E04	Q	
						N10E41	0	0	0	20 Minutes.		N10E41	Q	
						N15E53	0	0	0			N15E53	Q	
						N07E64	3	0	0			N07E64	Q	
328	24	23	088	156	012	S05W70	1	0	0		24	S05W70	E	SOLQUIET
						S17W58	0	0	0			S17W58	Q	MAGQUIET
						N13W44	5	0	0			N13W44	E	
						N10E31	0	0	0			N10E31	Q	
						N16E40	0	0	0			N16E40	Q	
						N07E51	2	0	0			N07E51	Q	
329	25	24	084	154	007	S04W86	0	0	0		25	S04W86	E	SOLQUIET
						S18W70	1	0	0			S18W70	Q	MAGQUIET
						N13W57	1	0	0			N13W57	E	
						N16E28	0	0	0			N16E28	Q	
						N12E35	0	0	0			N12E35	Q	
						N08E37	3	0	0			N08E37	Q	
						S07E76	1	0	0			S07E76	Q	
330	26	25	098	163	019	S17W82	0	0	0	Presto Magstrom	26	S17W82	Q	SOLQUIET
						N13W72	3	0	0	25/0228Z		N13W72	E	MAGQUIET
						S13E12	0	0	0			S13E12	Q	
						N16E15	1	0	0			N16E15	Q	
						N07E23	0	0	0			N07E23	E	
						N13E23	2	0	0			N13E23	E	
						S09E67	5	0	0			S09E67	E	
331	27	26	083	182	008	N13W85	1	0	0		27	N13W85	E	SOLQUIET
						S12W00	0	0	0			S12W00	Q	MAGQUIET
						N12E10	3	1	0			N12E10	Q	
						S10E56	7	1	0			S10E56	E	
332	28	27	142	196	007	N12W05	4	0	0		28	N12W05	E	SOLQUIET
						S21E01	0	0	0			S21E01	Q	MAGQUIET
						S08E43	0	0	0			S08E43	E	
						S14E61	0	0	0			S14E61	Q	
						N08E77	0	0	0			N08E77	Q	
333	29	28	194	214	005	N12W20	6	0	0		29	N12W20	E	SOLQUIET
						N05W14	0	0	0			N05W14	Q	MAGQUIET
						S21W12	1	0	0			S21W12	Q	
						N15E16	0	0	0			N15E16	Q	
						S09E29	4	0	0			S09E29	A	
						S14E55	1	0	0			S14E55	Q	
						N08E64	0	0	0			N08E64	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

NOVEMBER 1981

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	No. of Flares: Total	M	X	Outstanding events	Forecasts: Date	Location Lat-Long	Desc*	Alert Situations
334	30	29	249	226	005	N13W32	4	0	0	Presto Tenflare	30	N13W32	E	SOLALERT 30/XX
						N05W28	0	0	0	310 Flux Units		N05W28	Q	MAGQUIET
						S21W26	1	0	0	29/0919Z Duration		S21W26	Q	
						N15E03	1	0	0	5 Minutes		N15E03	Q	
						S11E18	4	0	0			S11E18	A	
						S15E42	0	0	0			S15E42	Q	
						N07E51	0	0	0			N07E51	Q	
						N19E74	1	1	0			N19E74	Q	
335	01	30	257	238	002	N13W46	2	0	0		01	N13W46	E	SOLNIL
						S20W41	0	0	0			S20W41	Q	MAGQUIET
						N17W10	11	0	0			N17W10	E	
						S10E06	8	0	0			S10E06	E	
						N14E12	0	0	0			N14E12	Q	
						S14E28	1	0	0			S14E28	Q	
						S03E55	0	0	0			S03E55	Q	
						S19E57	0	0	0			S19E57	Q	
						N19E64	4	0	0			N19E64	Q	
						N06E78	1	0	0			N06E78	A	

A=Active C=Caution D=Doubtful E=Eruptive MF=Major Flare OG=Other Groups P=Proton Q=Quiet

PRESTO MESSAGES (THE RAPID REPORT OF MAJOR EVENTS)

05 NOVEMBER 1981 TOYOKAWA 05/0230Z TENFLARE 170 FLUX UNITS 05/0211Z DURATION 5 MINUTES
07 NOVEMBER 1981 TOYOKAWA 07/0514Z TENFLARE 170 FLUX UNITS 07/0345Z DURATION 7 MINUTES
08 NOVEMBER 1981 TOYOKAWA 08/0513Z TENFLARE 100 FLUX UNITS 08/0357Z DURATION 9 MINUTES
09 NOVEMBER 1981 BOULDER 09/1413Z TENFLARE 1485 FLUX UNITS 09/1313Z DURATION 30 MINUTES
12 NOVEMBER 1981 KAKIOKA 12/0045Z MAGSTORM 11/1238Z
12 NOVEMBER 1981 BOULDER 12/1630Z SOFLARE X1/1B N17W10 12/1543Z DURATION 40 MINUTES
14 NOVEMBER 1981 BOULDER 14/2315Z SOFLARE M5/2B N15W46 14/2209Z DURATION 34 MINUTES
14 NOVEMBER 1981 BOULDER 14/2315Z TENFLARE 840 FLUX UNITS 14/2209Z DURATION 27 MINUTES
15 NOVEMBER 1981 KAKIOKA 15/0045Z MAGSTORM 14/0536Z
15 NOVEMBER 1981 TOYOKAWA 15/0015Z TENFLARE 1000 FLUX UNITS 14/2153Z DURATION 60 MINUTES
15 NOVEMBER 1981 TOYOKAWA 15/0245Z TENFLARE 100 FLUX UNITS 15/0143Z DURATION 12 MINUTES
15 NOVEMBER 1981 BOULDER 15/0330Z TENFLARE 260 FLUX UNITS 15/0135Z DURATION 1 MINUTES
15 NOVEMBER 1981 BOULDER 15/1622Z SOFLARE M3/2B 15/1419Z S06E60 DURATION 16 MINUTES
15 NOVEMBER 1981 BOULDER 15/1622Z TENFLARE 260 FLUX UNITS 15/1421Z DURATION 9 MINUTES
18 NOVEMBER 1981 TOYOKAWA 18/0455Z TENFLARE 110 FLUX UNITS 18/0411Z DURATION 10 MINUTES
22 NOVEMBER 1981 TOYOKAWA 22/0340Z TENFLARE 150 FLUX UNITS 22/0322Z DURATION 8 MINUTES
23 NOVEMBER 1981 TOYOKAWA 23/0032Z TENFLARE 160 FLUX UNITS 22/0656Z DURATION 20 MINUTES
25 NOVEMBER 1981 KAKIOKA 25/0435Z MAGSTORM 25/0228Z
29 NOVEMBER 1981 BOULDER 29/1430Z TENFLARE 310 FLUX UNITS 29/0919Z DURATION 5 MINUTES

RELATIVE SUNSPOT NUMBERS

INTERNATIONAL, R_I

1980 FINAL* 1981 PROVISIONAL

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1	171	147	140	147	132	112	62	149	121	219	216	165
2	176	141	132	182	170	133	59	140	105	183	206	222
3	152	122	154	169	148	156	44	140	112	160	219	218
4	146	113	126	183	151	152	62	112	109	170	189	231
5	131	94	133	141	157	162	55	112	113	195	195	207
6	126	71	172	138	132	178	57	85	102	220	169	199
7	108	89	158	130	152	171	61	75	107	205	171	192
8	124	115	129	142	195	177	52	62	115	208	185	166
9	117	126	124	124	199	158	58	65	121	190	177	134
10	145	120	157	127	199	148	55	96	138	202	144	147
11	148	123	178	130	200	169	66	130	136	164	131	146
12	178	126	185	120	193	183	79	139	140	138	114	150
13	185	123	153	127	197	149	86	153	134	132	183	158
14	213	106	142	128	180	140	99	145	140	148	187	178
15	217	106	124	110	212	141	104	150	153	129	212	148
16	237	81	129	120	197	127	109	161	134	138	223	126
17	198	72	120	109	213	124	119	171	125	129	219	103
18	183	79	131	95	214	119	104	161	148	145	214	102
19	166	78	138	86	203	100	85	151	175	169	189	90
20	171	88	133	120	199	77	71	145	188	134	183	82
21	170	105	142	135	170	99	87	129	222	175	151	78
22	178	99	136	134	122	106	106	138	220	172	130	79
23	177	115	98	121	108	93	119	162	200	137	107	65
24	191	120	124	125	92	96	109	196	178	148	109	59
25	200	115	137	142	119	93	127	213	189	142	101	60
26	208	120	169	133	90	105	127	206	215	171	92	74
27	206	115	175	126	73	79	133	210	222	181	63	87
28	206	142	170	135	72	93	112	208	214	195	92	110
29	208	165		150	106	92	138	159	194	191	131	134
30	187	174		184	92	83	148	173	233	190	152	155
31	182	159		180		92		126	201		144	
MEAN	174.4	114.4	143.5	133.8	156.2	126.0	89.8	144.2	158.2	169.3	161.2	135.6

1980 YEARLY MEAN = 154.6

* ZURICH R_Z SUNSPOT NUMBER REPLACED BY INTERNATIONAL R_I SUNSPOT NUMBER BEGINNING WITH JANUARY 1981 DATA.

DAILY SOLAR FLUX AT 2800 MHz
OTTAWA ARO

FLUX ADJUSTED TO 1 A.U., S_a

1980 1981

DAY	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1	223.0	189.7	207.3	224.4*	210.8*	188.0	149.6	175.4	183.9	248.3	210.6*	222.5*
2	213.3	181.4	210.1	238.6*	211.2*	193.4	144.3	168.9	182.6	242.8	204.8*	241.3*
3	197.9	173.1	205.4*	238.9*	221.2	206.5*	134.9	163.3*	192.4	229.0	196.5	255.3*
4	199.4	166.8	197.5	245.6*	219.7	221.2	133.8	165.9	198.6*	233.4	191.1	263.1
5	186.4	161.8	187.8	227.3	226.2	237.5	136.0	152.5	178.8	248.7	193.6*	254.1
6	171.0	157.4	185.4*	212.7	235.7	231.2	148.6	148.7	179.6	263.2*	200.3	244.6
7	176.4	168.6*	188.5*	201.4	242.3	234.2	146.7	149.8	173.0	262.5*	204.1*	241.4
8	169.3	169.2	179.1	200.6*	268.8*	222.4*	146.7*	152.4	178.4	266.3*	200.7*	234.7*
9	175.1	167.0	176.7	202.9	287.7	218.6	152.8	150.0*	180.5	256.5	205.4*	232.6
10	188.5	164.5	185.2	203.1	268.8*	217.7*	157.1	156.5*	182.0	247.6	213.4	231.0*
11	203.5*	160.5	186.4*	199.7	272.1	228.1*	154.8	167.4	206.4	240.8	220.0	217.0
12	248.5*	156.6	198.6*	188.8	251.9	223.4	152.0	167.7*	209.8*	234.2	236.8*	223.5
13	244.2	158.1	197.8	202.1	254.9*	221.3	152.6	174.2*	208.7	230.2	256.2	215.9
14	253.2	153.9	200.3	208.9	256.5*	232.5	159.1	184.2	208.2	228.7*	275.6	207.4
15	266.2	149.8	193.5	205.3*	254.9*	223.9	164.7	194.5*	225.1	230.4	287.1	191.2
16	273.0	152.5	186.9	194.9	247.5*	218.9	169.1	205.3*	221.8*	227.5	302.4	181.2
17	254.8	155.3	188.1*	181.5	242.7	207.6	171.2	200.8*	228.7	218.2*	302.9	172.7
18	255.1	161.0	190.2*	180.0	229.2	194.4	178.1	204.7*	244.1	216.5*	296.5*	160.8*
19	238.5	165.4	178.8	175.1	214.9	186.6*	165.9	220.3	254.6*	210.5*	278.6	157.0
20	235.9*	159.9*	188.3	182.7	200.9*	180.0	159.8	234.7*	269.8	208.1	257.8*	152.0
21	224.8	156.6	189.9*	189.5	196.1	188.4	153.6	228.1*	267.1*	191.2	238.2	153.9
22	231.2	156.4	199.5	189.4*	191.5	169.3*	166.1*	235.9	262.2*	183.0	218.6	152.7
23	226.0	156.8	217.9*	188.0*	204.9	159.6	171.2*	254.7*	254.8	183.8	208.2	151.9
24	223.6	157.3	231.5*	191.4	203.0*	169.8	174.6	261.6*	258.9	182.2	201.1	150.4
25	220.7	169.2*	233.8	199.3	203.8*	177.2	183.6	259.7	254.8	182.0	186.0	159.1
26	220.1	174.6	238.5	198.6*	198.8	173.8	193.9	273.1*	272.9*	188.8	172.0	178.3*
27	220.3	175.8*	235.4	197.6	194.7*	177.0	193.4	255.8*	281.6*	202.8	171.2	198.3
28	231.5*	197.2*	224.9*	203.7*	178.2*	181.3	191.6	223.6	275.3	200.9	182.4	206.4*
29	217.2	204.2	.	212.4*	176.9	178.6	187.5*	213.3	259.1	204.5	187.5	226.5*
30	209.9	209.1	.	208.2	175.3	164.6*	179.0	204.2*	265.1	203.8	201.5	231.6
31	199.0	209.1	.	214.0*	.	156.1	.	197.6	256.0*	.	207.1	.
MEAN	218.8	169.0	199.5	203.2	224.7	198.9	161.9	198.2	226.0	221.9	222.8	203.3

* adjusted for burst
A = interpolated data point

DAILY SOLAR INDICES

NOVEMBER 1981

DAY OF MONTH	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	PROVISIONAL SUNSPOT NUMBERS		OBSERVED FLUX	SOLAR FLUX ADJUSTED TO 1 A.U.								
			R_I	$R_{A'}$	OTTAWA 2800	AFGL 15400	AFGL 8800	AFGL 4995	OTTAWA 2800	AFGL 2695	AFGL 1415	AFGL 606	AFGL 410	AFGL 245
1	305	14	165	168	225.9*	608	297	244	222.5*	206	195			25
2	306	15	222	223	245.2*	620	289	255	241.3*	224	203			26
3	307	16	218	225	259.5*	636	312	267	255.3*	242	213			28
4	308	17	231	265	267.6	618	296	255	263.1	244	206			95
5	309	18	207	205	258.5				254.1					
6	310	19	199	196	249.1	588	285	244	244.6	229	206			33
7	311	20	192	188	245.8	607	309	245	241.4	233	223			35
8	312	21	166	163	239.2*	628	287	231	234.7*	220	230			77
9	313	22	134	152	237.1	613	290	243	232.6	214	215			24
10	314	23	147	153	235.7*	597	332	246	231.0*	229	201			39
11	315	24	146	156	221.4	613	284	230	217.0	204	202			34
12	316	25	150	155	228.3				223.5					
13	317	26	158	159	220.5	613	306	232	215.9	205	194			32
14	318	27	178	166	211.8	593	310	219	207.4	191	180			22
15	319	1	148	142	195.5	515		197	191.2	182	170			18
16	320	2	126	121	185.3	471			181.2				44	16
17	321	3	103	109	176.8	559	277	194	172.7	163	163			22
18	322	4	102	100	164.6*	552	279	185	160.8*	157	154			22
19	323	5	90	89	160.9				157.0					
20	324	6	82	82	155.7	459	261	180	152.0	146	141	91	44	
21	325	7	78	68	157.7	575	301	181	153.9	147	138	99	45	
22	326	8	79	69	156.6				152.7					
23	327	9	65	61	155.8	589	292	177	151.9	148	144	105	47	
24	328	10	59	61	154.4	586	294	176	150.4	147	139	103	48	
25	329	11	60	60	163.3	580	303	184	159.1	150	144	109	51	
26	330	12	74	64	183.1*	591	313	201	178.3*	170	165	110	49	
27	331	13	87	96	195.6	572	300	211	190.3	183	167	106	49	
28	332	14	110	114	212.1*	583	312	223	206.4*	194	171	111	52	
29	333	15	134	133	232.8*				226.5*					
30	334	16	155	153	238.3				231.6					
MEAN			135.6	136.5	207.8	582	297	218	203.3	193	181	104	47	34

*Adjusted for burst.
NOTE: Data gaps in AFGL Sagamore Hill data are due to equipment problems.

OBSERVED AND PREDICTED SOLAR ACTIVITY INDICES

	SUNSPOT NUMBERS						2800 MHz FLUX adjusted to 1 AU	
	Rz or R_I		Ra		Rs		Sa	
Date	Monthly Mean	Smoothed	Monthly Mean	Smoothed	Monthly Mean	Smoothed	Monthly Mean	Smoothed
Dec 78	122.7	118	121.0	111	121.6	116	170.0	165
Jan 79	166.6	124	164.4	116	150.2	119	196.5	168
Feb	137.5	131	136.8	123	153.0	124	199.1	172
Mar	138.0	136	132.5	128	136.7	128	184.0	176
Apr	101.5	141	95.8	133	127.0	133	175.0	180
May	134.4	147	121.8	139	120.4	139	168.9	186
Jun	149.5	153	136.4	144	138.9	144	186.0	191
Jul	159.4	155	140.5	145	123.1	145	171.4	192
Aug	142.2	155	125.1	144	129.2	145	177.0	192
Sep	188.4	156	184.0	143	156.5	144	202.3	191
Oct	186.2	158	178.2	144	171.7	145	216.4	192
Nov	183.3	162	176.5	149	182.9	149	226.8	196
Dec	176.3	164	157.6	152	151.0	152	197.2	199
Jan 80	159.6	164	145.3	153	153.6	154	199.6	200
Feb	155.0	163	133.9	154	148.7	155	195.1	200
Mar	126.2	161	107.9	153	117.8	153	166.5	200
Apr	164.1	159	138.5	151	164.0	152	209.3	198
May	179.7	156	172.3	149	185.4	151	229.1	197
Jun	157.3	155	153.6	149	153.2	151	199.3	198
Jul	136.3	153*	136.0	144	144.1	151	190.8	197
Aug	135.4	150*	133.0	144	121.9	150	170.3	196
Sep	155.0	150*	150.0	146	138.8	152	185.9	198
Oct	164.7	150*	160.8	149	157.1	154	202.9	200
Nov	147.9	148*	149.9	149	168.5	153	213.4	199
Dec	174.4	142*	167.5	145	174.3	150	218.8	196
Jan 81	114.4†	140*	115.4	144	120.5	149	169.0	195
Feb	143.5†	141*	143.7	146	153.5	152	199.5	198
Mar	133.8†	143*	149.2	149	157.5	156	203.2	202
Apr	156.2†	143*	169.2	149	180.7	158	224.7	204
May	126.0†	143*	141.3	147	152.8	159	198.9	204
Jun	89.8†	140(± 4)*	99.0	144	112.9	156	161.9	---
Jul	144.2†	138(± 6)*	154.3	142	152.1	154	198.2	---
Aug	158.2†	137(±10)*	170.4	141	182.1	152	226.0	---
Sep	169.3†	136(±13)*	174.5	139	177.7	151	221.9	---
Oct	161.2†	134(±14)*	157.0	138	178.6	149	222.8	---
Nov	135.6†	131(±16)*	---	134	157.6	145	203.3	---
Dec	---	127(±16)*	---	130	---	140	---	---
Jan 82	---	123(±16)*	---	126	---	136	---	---
Feb	---	119(±16)*	---	122	---	131	---	---
Mar	---	116(±16)*	---	119	---	128	---	---
Apr	---	114(±16)*	---	117	---	125	---	---
May	---	111(±15)*	---	114	---	122	---	---

*An asterisk denotes either a value of the observed 12-month running mean or the predicted 12-month average that is based on preliminary observations of the Zurich and International relative sunspot numbers (R_Z and R_I). Parentheses enclose the 90% confidence limits. Shaded boxes enclose the most recent smoothed values; boxes not shaded enclose predicted values. Ra is the new symbol for R_A'. All tabulated entries of Ra are final values.

†R_I replaces R_Z as of January 1981.

SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS
CYCLE 21

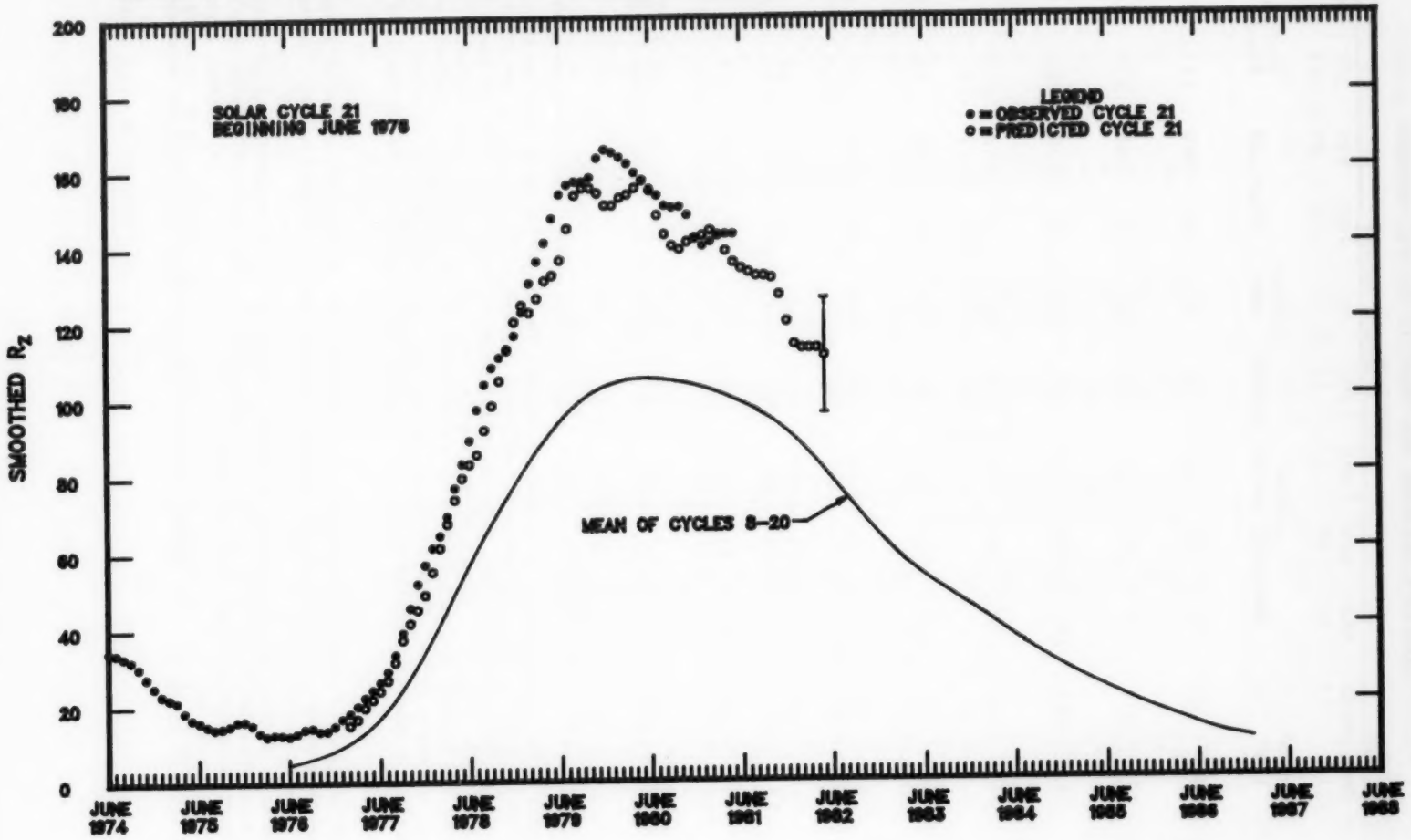
MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1976	15	13	12	13	13	12	13	14	14	13	14	15
1977	17	18	20	22	24	26	29	33	39	46	52	57
1978	61	65	70	77	83	89	97	104	108	111	113	118
1979	124	131	137	141	147	153	155	155	156	158	162	165*
1980	164	163	161	159	156	155	153	150	150	150	148	142
1981	140	141	143	143	143	140	138	137	136	134	131	127
						(4)	(6)	(10)	(13)	(14)	(16)	(16)
1982	123	119	116	114	111	107	103	99	94	89	85	81
	(16)	(16)	(16)	(16)	(15)	(15)	(12)	(9)	(9)	(7)	(8)	(8)
1983	77	75	73	71	68	65	63	62	61	60	60	59
	(9)	(10)	(11)	(13)	(16)	(18)	(19)	(21)	(23)	(24)	(25)	(25)
1984	58	55	52	49	47	46	45	44	42	40	38	37
	(26)	(26)	(26)	(27)	(28)	(29)	(29)	(29)	(28)	(27)	(26)	(26)
1985	36	35	34	34	33	31	30	29	28	27	26	26
	(26)	(25)	(24)	(24)	(24)	(23)	(22)	(21)	(20)	(21)	(22)	(22)
1986	25	24	23	21	20	18	16	15	14	14	14	13
	(23)	(23)	(23)	(22)	(21)	(20)	(20)	(19)	(17)	(16)	(15)	(13)
1987	13	13	13	14	15	16	17					
	(12)	(12)	(12)	(13)	(14)	(15)	(16)					

The table gives observed *smoothed* sunspot numbers for Cycle 21 up to the one calculated from the latest observed data, marked by a left-hand bracket. They are based on final Zürich numbers through 1980 and provisional International numbers thereafter. Some of these data after the June 1976 value will change slightly when final data for 1981 are included. The numbers after the bracket are predictions by the McNish-Lincoln method (see *Explanation of Data Reports*, February 1981). Shown in parentheses are the corresponding absolute values of the 90% confidence interval, an indication of the uncertainty above and below the predicted number.

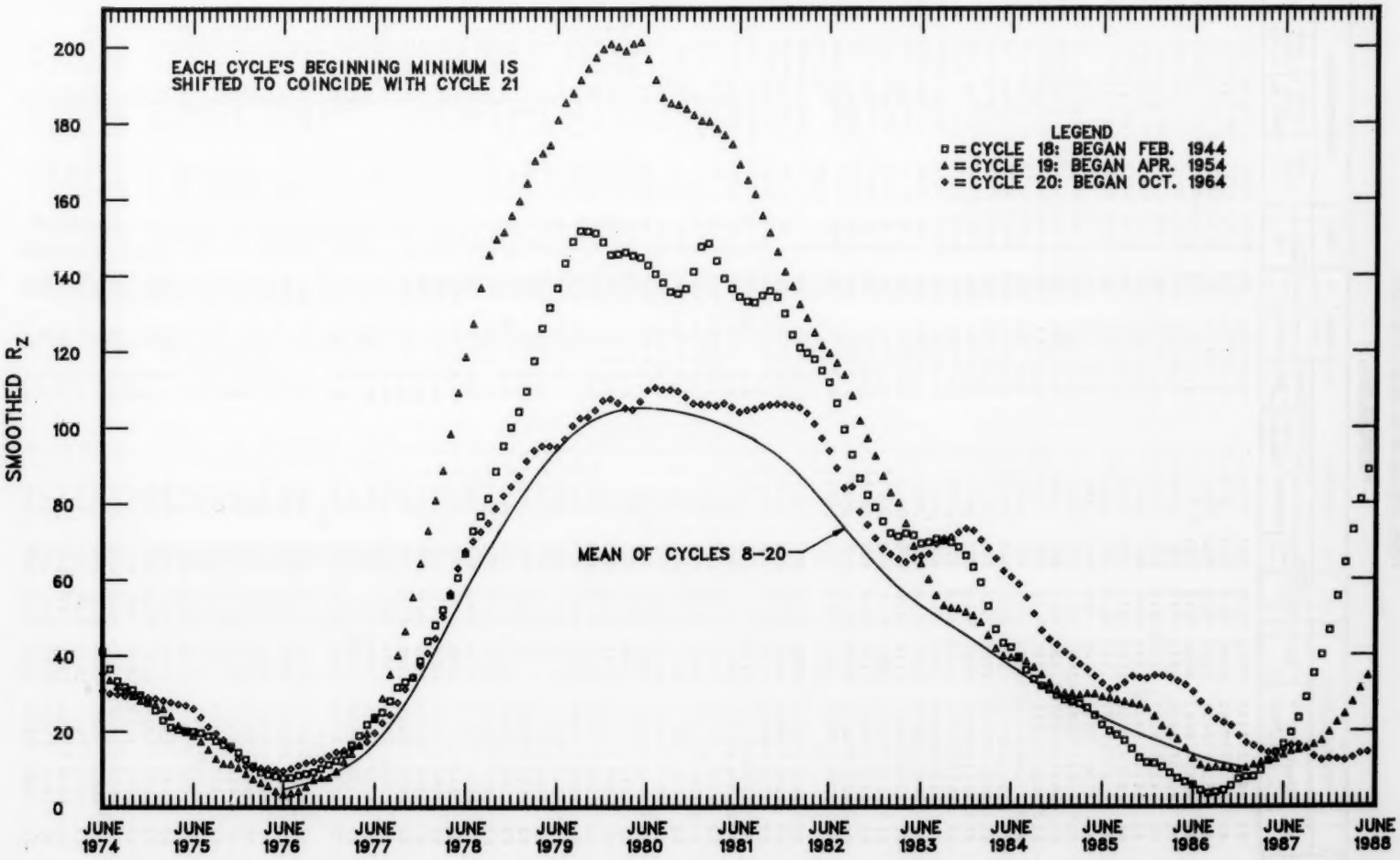
The McNish-Lincoln prediction method is recommended for predictions up to only one year ahead. From that point, the predictions regress rapidly toward the mean value. Furthermore, the method is very sensitive to the identification of a minimum epoch. In SGD issues 390-401, the Cycle 21 predictions were based on March 1976 as the minimum epoch. Later studies, including one published by Waldmeier, show that June 1976 is the more appropriate epoch of minimum. Thus, we adopted a June 1976 minimum.

*MAXIMUM OF SUNSPOT CYCLE 21. The maximum smoothed sunspot number occurred in December 1979.

OBSERVED AND ONE-YEAR-AHEAD PREDICTED SMOOTHED SUNSPOT NUMBERS



SUPERPOSITION OF CYCLES 18, 19, AND 20



Nov 81

Hα SOLAR FLARES

NOVEMBER 1981

OBSERVATORY	OBSERVED UT				LOCATION					DURATION — MIN.	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY			COND.	TYPE	TIME — UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
LEAR	01	0441	0445	0516	S13	E44	.732		4.5	35	SB	3	C		144		
LEAR	01	0550	0552	0555	S12	E43	.717		4.5	5	SN	3	C		27		
LEAR	01	0621	0621	0626	S13	E46	.753		4.7	5	SF	3	C		21		
LEAR	01	0635	0642	0655	S13	E43	.721		4.5	20	SN	3	C		37		
LEAR	01	0913	0915	0933	N15	E21	.476		3.8	20	SF	3	C		57		
ATHN	01	1135E	1137	1138D	S12	E35	.622		4.1	3D	SN	2	C		127		
HOLL	01	1434E	1434U	1444	N09	W27	.501		3.6	10	SF	3	C		40		
HOLL	01	1449	1450	1500	S11	E39	.666		4.5	11	SN	3	C		31		
HOLL	01	1505	1537	1543	S11	E38	.654		4.5	38	SB	3	C		64		
HOLL	01	1539	1542	1545	N08	W28	.508		3.8	6	SF	3	C		24		
HOLL	01	1543	1600	1611	S11	E39	.656		4.6	28	SN	3	C		21		
HOLL	01	1642	1659	1703	S22	E13	.489		2.7	21	SF	3	C		21		
HOLL	01	1643	1814	1817	S14	E38	.668		4.5	94	SB	3	C		139		
PALE	01	1722E	1722U	1802	S13	E37	.652		4.5	40	SN	2	C		26		D
PALE	01	1813	1815	1819	S11	E36	.629		4.5	6	SB	2	C		49		
[HOLL	01	1839	1843	1914	S22	E11	.477		2.6	35	SN	3	C		173		
[PALE	01	1843	1843	1851	S22	E11	.477		2.6	8	SN	2	C		30		
HOLL	01	1852	1853	1904	N16	E12	.400		2.7	12	SF	3	C		35		
HOLL	01	1935	1940	1949	S11	E36	.629		4.5	14	SN	3	C		23		
HOLL	01	2003	2019	2043	S10	E33	.586		4.3	40	SN	3	C		45		
HOLL	01	2104	2105	2110	S10	E35	.612		4.5	6	SB	3	C		49		
HOLL	01	2132	2136	2203	S11	E33	.592		4.4	31	SF	3	C		47		
HOLL	01	2132	2136	2159	S22	E10	.472		2.6	27	SN	3	C		60		
[HOLL	01	2254	2254	2310	S10	E36	.624		4.7	16	SB	3	C		66		
[LEAR	01	2256	2257	2303	S11	E33	.592		4.4	7	SB	3	C		97		
LEAR	02	0038	0041	0050	S22	E07	.457		2.6	12	SF	3	C		37		
LEAR	02	0046	0046	0055	S11	E32	.578		4.4	9	SF	3	C		39		
[LEAR	02	0145	0146	0154	S11	E32	.578		4.5	9	SB	3	C		76		
[MANI	02	0146E	0147	0149D	S12	E31	.572		4.4	3D	SB	1	V		50	.6	
LEAR	02	0308	0310	0317	S11	E31	.566		4.5	9	SB	3	C		20		
LEAR	02	0353	0355	0357	S11	E30	.553		4.4	4	SN	3	C		23		
LEAR	02	0405	0407	0412	S22	E06	.453		2.6	7	SF	3	C		28		
LEAR	02	0633	0634	0637	S11	E28	.527		4.4	4	SN	3	C		39		
LEAR	02	0817	0818	0822	S11	E28	.527		4.4	5	SF	3	C		34		
WEND	02	1154	1201	1209	N03	E81	.988		8.6	15	SF		C	1201	44		
WEND	02	1213	1215	1219	S11	E25	.488		4.4	6	SN		C	1215	38	.4	
WEND	02	1244	1246	1301	S10	E23	.454		4.3	17	SF		C	1246	31	.4	
WEND	02	1248	1250	1258	N13	E43	.720		5.8	10	SF		C	1250	38	.5	
[WEND	02	1403	1409	1415	N15	E03	.334		2.8	12	SF		C	1409	38	.4	
[RAMY	02	1411	1411	1417	N17	E04	.369		2.9	6	SF	3	C		29		
[HOLL	02	1501	1504	1525	N15	E03	.334		2.9	24	1B	3	C		313		
[RAMY	02	1502	1504	1521	N15	E02	.332		2.8	19	1B	3	C		271		
RAMY	02	1504	1504	1509D	S11	E24	.475		4.4	5D	SB	3	C		42		
HOLL	02	1907	1908	1930	S12	E31	.572		5.1	23	SN	3	C		27		
HOLL	02	2021	2026	2038	S10	E21	.428		4.4	17	SN	3	C		35		
HOLL	02	2044	2044	2050	S10	E20	.415		4.4	6	SB	3	C		32		
HOLL	02	2053	2128	2224	S11	E18	.400		4.2	91	SB	3	C		175		
[HOLL	02	2254	2254	2259	S10	E19	.402		4.4	5	SB	3	C		76		D
[LEAR	02	2255	2256	2300	S11	E19	.412		4.4	5	SN	3	C		99		
[MANI	02	2255E	2255U	2300	S11	E19	.412		4.4	5	SF	1	V		60	.7	
[HOLL	02	2330	2333	2340D	S12	E16	.387		4.2	10D	SB	3	C		95		D
[MANI	02	2332E	2332U	2339D	S12	E17	.398		4.3	7D	SN	1	V		100	1.1	F
[LEAR	02	2333	2334	2353	S12	E17	.398		4.3	20	SF	3	C		106		
LEAR	03	0730	0731	0734	S12	E18	.409		4.7	4	SF	3	C		22		
LEAR	03	0834	0837	0843	S13	E24	.491		5.2	9	SF	3	C		37		
[LEAR	03	0907	0910	0922	S21	W11	.460		4.2	15	SN	3	C		67		
[WEND	03	0908	0912	0918	S21	W09	.449		4.1	10	SF		C	0912	38	.4	
WEND	03	0946	0952	0957	S11	E16	.375		4.6	11	SN		C	0952	10	.1	
WEND	03	1331	1333	1340	N14	W49	.787		7.2	9	SF		C	1333	25	.4	
HOLL	03	1500E	1502	1516	S17	E83	.995		9.8	16	SB	3	C		0		
[WEND	03	1530		1538D	N18	W46	.771		7.1	8D	SN		C	1531	60	.9	
[HOLL	03	1531	1531	1546	N18	W49	.800		7.3	15	SN	3	C		50		
HOLL	03	1609	1627	1646	N08	W58	.858		8.0	37	SF	3	C		40		
HOLL	03	1619	1619	1630	S20	W15	.475		4.8	11	SF	3	C		26		
[HOLL	03	1650	1654	1745	N15	W08	.355		4.3	55	SN	3	C		126		
[RAMY	03	1652	1655	1716	N14	W08	.340		4.3	24	SN	3	C		157		
HOLL	03	1916	1917	1925	S20	W16	.483		5.0	9	SF	3	C		29		
HOLL	03	1929	1930	1955	N07	W62	.890		8.5	26	SF	3	C		34		
HOLL	03	1935	1937	1955	N16	W57	.865		8.1	20	SF	3	C		24		
HOLL	03	2009	2018	2035	S11	E07	.288		4.4	26	SB	3	C		115		

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		CONF.	TYPE	TIME UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
HOLL	03	2012	2013	2028	N16	W53	.831		7.8	16	SF	3	C		21		
HOLL	03	2102	2105	2119	N15	W57	.863		8.2	17	SB	3	C		69		
HOLL	03	2252	2253	2302	N30	W11	.585		4.8	10	SF	3	C		37		
HOLL	03	2253	2257	2348D	S23	W19	.544		5.4	55D	SN	3	C		75		
LEAR	03	2257	2257	2309	S23	W19	.544		5.4	12	SF	3	C		31		
HOLL	03	2305	2306	2314	N15	W60	.887		8.5	9	SB	3	C		33		
LEAR	03	2306	2307	2314	N16	W58	.873		8.3	8	SN	3	C		34		
LEAR	03	2311	2313	2330	S23	W19	.544		5.4	19	SF	3	C		28		
HOLL	03	2319	2319	2328	S07	E07	.228		4.5	9	SN	3	C		28		
PEKG	04	0118E	0118	0130D	S07	E05	.211		4.4	12D	SN		P	0118	42	.4	E
PEKG	04	0130E	0130	0130D	N17	W61	.897		8.6		SN		P	0130	25	.5	D
PEKG	04	0130E	0130	0130D	N19	E03	.395		4.3		SF		P	0130	46	.5	E
PEKG	04	0130E	0130	0130D	N20	W15	.473		5.2		SF		P	0130	55	.6	D
LEAR	04	0152	0154	0218	S08	E06	.233		4.5	26	SN	3	C		81		
PEKG	04	0159E	0211	0217	S07	E05	.211		4.5	18	SN		P	0211	101	1.1	E
PEKG	04	0217	0222	0227	N17	W62	.904		8.7	10	SF		P	0222	46	1.0	D
LEAR	04	0345	0346	0354	N16	W60	.888		8.7	9	SF	3	C		24		
LEAR	04	0400	0402	0426	S08	E04	.220		4.5	26	SF	3	C		29		
LEAR	04	0432	0438	0442	N08	W65	.913		9.1	10	SF	3	C		18		
LEAR	04	0511	0516	0530	S12	E06	.295		4.7	19	SN	3	C		70		
PEKG	04	0547E	0547	0548	N11	W05	.274		4.6	1	SN		P	0547	59	.6	D
LEAR	04	0633	0639	0700	S11	W01	.261		4.3	27	SN	3	C		165		
PEKG	04	0637	0646	0655	S12	W02	.279		4.4	18	SN		C	0646	168	1.8	F
ATHN	04	0645E	0647	0707	S09	W02	.229		4.4	22	1B	2	C		222		
WEND	04	0745E		0802	S10	W34	.597		6.9	17	SN		C	0745	25	.3	
WEND	04	0804	0825	0830	S13	E01	.294		4.4	26	SN		C	0825	75	.8	
LEAR	04	0804	0824	0845	S13	W01	.294		4.4	41	SN	2	C		112		
ATHN	04	0805	0808	0846	S09	W02	.229		4.5	41	1B	2	C		254		
LEAR	04	0947	0954	1000	S14	W01	.311		4.5	13	SN	2	C		55		
WEND	04	0948	0954	1002	S13	E00	.294		4.4	14	SF		C	0954	80	.8	
ATHN	04	1020E	1022	1056	S22	E90	1.000		11.2	36	1B	2	C				
WEND	04	1049	1110	1132	S12	W02	.279		4.6	43	1B		C	1100	218	2.3	
ATHN	04	1052E	1055U	1223	S08	W04	.220		4.8	91	1B	2	C		318		
RAMY	04	1123E	1217	1234	S14	W03	.315		4.7	71	SN	3	C		102		
WEND	04	1147	1202	1212D	S11	E00	.260		4.5	25D	1N		C	1202	210	2.2	
RAMY	04	1339	1358	1418	S10	W05	.258		4.9	39	SN	3	C		59		
RAMY	04	1433	1446	1500	S09	W03	.232		4.8	27	SN	3	C		54		
HOLL	04	1606	1606	1623	S14	W05	.322		5.0	17	SB	3	C		60		
RAMY	04	1607	1611	1620	S13	W04	.301		5.0	13	SN	3	C		68		
HOLL	04	1702	1706	1716	S25	W26	.623		6.7	14	SN	3	C		36		
HOLL	04	1735	1745	1755	S07	W04	.204		5.0	20	SN	3	C		43		
HOLL	04	1825	1832	1852	S10	W05	.258		5.1	27	SB	3	C		102		D
PALE	04	1830E	1832U	1836	S12	E03	.282		5.0	6	SN	3	C		67		
HOLL	04	1925	1949	2011	S05	W06	.189		5.3	46	1B	3	C		192		
PALE	04	1944	1950	1959	S08	W06	.233		5.3	15	SN	3	C		62		
HOLL	04	2048	2110	2156	S07	W06	.218		5.3	68	SB	3	C		111		
HOLL	04	2159	2207	2216	S07	W06	.218		5.4	17	SN	3	C		31		
HOLL	04	2229	2229	2348D	S13	W07	.316		5.5	79D	SB	3	C		52		
LEAR	04	2300E	2339U	0004	S06	W06	.203		5.4	64	SN	3	C		124		
ISTA	05	0721		0734	N12	W06	.293		5.8	13	SN						E
ISTA	05	0722		0730	S06	W22	.409		7.0	8	SF						B
ISTA	05	0745		0818	N12	W06	.293		5.8	33	SB						B
RAMY	05	1150E	1234	1235D	N16	W34	.631		8.0	45D	1N	3	C		312		
RAMY	05	1404	1406	1451	S17	E69	.947		10.8	47	SN	3	C		81		
HOLL	05	1406	1406	1428	S15	E64	.915		10.4	22	SN	3	C		38		
RAMY	05	1424	1424	1430	S10	W12	.316		6.5	6	SF	3	C		31		
HOLL	05	1447	1449	1523	S13	W18	.417		7.0	36	1B	3	C		239		
RAMY	05	1448	1450	1508	S14	W18	.428		7.0	20	SB	3	C		138		
HOLL	05	1731	1731	1749	S12	W19	.419		7.2	18	SN	3	C		48		
HOLL	05	1828	1831	1849	S08	W10	.269		6.5	21	SF	3	C		47		
HOLL	05	2025	2026	2034	S16	E66	.929		10.8	9	SF	3	C		21		
LEAR	05	2313	2316	2349	S12	W23	.468		7.7	36	1N	3	C		206		
PALE	05	2316	2317	2334	S12	W24	.481		7.8	18	SF	2	C		71		D
LEAR	06	0001	0001	0007	S11	W23	.459		7.7	6	SN	3	C		70		
PEKG	06	0436	0440	0449	S12	W29	.543		8.4	13	SF		P	0440	34	.4	D
LEAR	06	0725	0726	0731	S07	W22	.415		8.0	6	SF	3	C		83		
LEAR	06	0747	0757	0820	N12	W06	.292		6.8	33	SF	2	C		114		
PEKG	06	0749	0759	0829	N12	W08	.305		6.9	40	SN		C	0759	97	1.0	E
LEAR	06	0933	0934	0945	S10	W23	.451		8.1	12	SF	2	C		36		

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION — MIN.	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY			COND.	TYPE	TIME — UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
ATHN	06	0944E	0945U	0951	S04	W25	.441		8.3	7	SB	2	C		95		
ATHN	06	1002	1003	1044	S24	W17	.536		7.7	42	SB	2	C		95		
ATHN	06	1034	1035	1039D	S55	W26	.888		8.4	5D	SN	2	C		32		D
RAMY	06	1202	1317	1438	S07	W30	.528		8.8	156	SB	3	C		174		
RAMY	06	1208	1303	1319	S14	E24	.497		8.3	71	SF	3	C		53		
RAMY	06	1246	1316	1419	N18	W48	.789		10.1	93	SN	3	C		142		
ATHN	06	1319E	1320	1336	S04	W29	.500		8.7	17	SB	2	C		64		
RAMY	06	1539	1604	1650	S08	W33	.574		9.1	71	SN	3	C		152		
HOLL	06	1546	1549	1555	S07	W31	.542		9.0	9	SF	3	C		53		
HOLL	06	1703	1708	1714	S10	W27	.504		8.7	11	SF	3	C		37		
HOLL	06	1704	1704	1712	S14	E22	.473		8.4	8	SF	3	C		22		
HOLL	06	1721	1735U	1757	S08	W31	.546		9.0	36	SN	3	C		116		
RAMY	06	1727	1730	1744	S07	W28	.500		8.8	17	SB	3	C		66		
HOLL	06	1729	1743	1814	S17	E57	.866		11.0	45	SF	3	C		51		
HOLL	06	1838	1910	2003	S07	W30	.528		9.0	85	SN	3	C		131		
HOLL	06	1956	1956	2004	S13	E20	.439		8.3	8	SF	3	C		20		
HOLL	06	2011	2026	2046	S07	W35	.596		9.5	35	1N	3	C		231		
HOLL	06	2121	2130	2133	N30	W48	.839		10.5	12	SF	3	C		18		
HOLL	06	2135	2138	2150	S14	E21	.461		8.5	15	SN	3	C		34		
HOLL	06	2229E	2239U	2231D	S11	W30	.550		9.2	2D	SN	3	C		50		
LEAR	06	2335	2342	2345	S20	E43	.749		10.2	10	SF	2	C		17		
PEKG	07	0011	0018	0030	S06	W39	.645		9.9	19	SB		C	0018	139	1.8	E
LEAR	07	0015	0021	0030	S07	W36	.609		9.7	15	SN	3	C		103		
LEAR	07	0134	0136	0216	S13	E18	.415		8.4	42	SF	3	C		83		
LEAR	07	0259	0304	0331	S07	W40	.661		10.1	32	1N	3	C		216		
PEKG	07	0304	0305	0334	S05	W40	.655		10.1	30	1N		C	0305	189	2.6	E
LEAR	07	0354	0356	0416	S07	W39	.648		10.1	22	1B	3	C		413		
LEAR	07	0357	0358	0407	S17	E47	.775		10.7	10	SF	3	C		36		
PEKG	07	0359	0401	0415	S06	W40	.658		10.2	16	1N		C	0401	294	4.1	FT
LEAR	07	0432	0438	0525	S13	E19	.426		8.6	53	SF	3	C		81		
PEKG	07	0440	0446	0446D	S14	E21	.460		8.8	6D	SF		P	0446	55	.6	D
LEAR	07	0449	0449	0509	S10	W31	.556		9.5	20	SF	3	C		20		
LEAR	07	0718	0720	0747	S05	W40	.655		10.3	29	1N	3	C		308		
ATHN	07	0720E	0723U	0741	S06	W42	.683		10.5	21	SB	2	C		109		
PEKG	07	0725E	0727	0750	S03	W41	.663		10.4	25	1B		P	0727	302	4.2	FT
LEAR	07	0846	0852	0919	S14	E19	.437		8.8	33	SF	3	C		24		
RAMY	07	1240	1240	1322	S11	W36	.626		10.2	42	SF	3	C		101		
RAMY	07	1309	1335	1353	S15	E13	.387		8.5	44	SN	3	C		55		
HOLL	07	1557E	1558U	1636	S19	E35	.660		10.3	39	SN	3	C		124		
HOLL	07	1626	1626	1638	S17	E13	.413		8.7	12	SF	3	C		33		
HOLL	07	1640	1701	1711	S18	E36	.664		10.4	31	SN	3	C		57		
HOLL	07	1644	1645	1703	S09	W39	.655		10.6	19	SN	3	C		39		
RAMY	07	1644	1644	1652	S09	W39	.655		10.6	8	SN	3	C		22		
HOLL	07	1723E	1812	1818	S18	E35	.653		10.3	55	SB	3	C		113		
HOLL	07	1817	1824	1835	S09	W39	.655		10.7	18	SF	3	C		32		
HOLL	07	1820	1828	1927	S19	E34	.649		10.3	67	1B	3	C		242		
PALE	07	1821E	1821U	1843D	S19	E35	.660		10.4	22D	SN	2	C		50		
HOLL	07	1851	1851	1903	S09	W41	.680		10.9	12	SF	3	C		22		
RAMY	07	1920	1926	1950	S16	E56	.855		12.0	30	SF	3	C		26		
HOLL	07	2033	2036	2042	N18	E57	.868		12.1	9	SN	3	C		42		
LEAR	07	2353	2358	0032	N19	W67	.938		13.0	39	SF	3	C		22		
PEKG	08	0358E	0358	0409	S20	E27	.581		10.2	11	1B		P	0358	323	4.1	FZ
MANI	09	0025E	0027	0040	N20	E32	.633		11.4	15	SB	1	V		150	1.9	F
PEKG	09	0032E	0033	0041	N19	E32	.626		11.4	9	1F		P	0033	218	2.7	F
PEKG	09	0412	0503	0503D	N19	E29	.593		11.3	51D	SN		P	0503	118	1.4	E
PEKG	09	0419	0459	0503D	S19	E22	.519		10.8	44D	SN		P	0459	147	1.8	FZ
PEKG	09	0458E	0503	0511D	S23	E35	.685		11.8	13D	1N		P	0503	286	4.1	FZ
MANI	09	0612	0615U	0623	S19	E13	.437		10.2	11	SN	1	V		135	1.5	F
PEKG	10	0353E	0353	0442	S24	E69	.953		15.3	49	SN		C	0353	55		D
PEKG	10	0510	0512	0525	S07	W83	.994		16.4	15	1N		C	0512	59		E
PEKG	10	0510	0515	0520	N11	E61	.886		14.8	10	SN		P	0515	46	1.0	E
PEKG	10	0545	0547	0615	S08	W76	.973		15.9	30	1B		C	0547	189		HT
PEKG	10	0630	0634	0646	S06	W84	.995		16.6	16	SN		C	0634	63		DT
PEKG	10	0740	0755	0809	S08	W77	.977		16.1	29	SB		C	0755	59		ET
PEKG	11	0015E	0020	0031	S07	W90	1.000		17.8	16	SN		P	0020	46		AE
PEKG	11	0035	0037	0043	S07	W90	1.000		17.8	8	SB		C	0037	67		AD
MONT	11	0854	0859	0918	N03	E01	.112		11.4	24	SN		C	0859	100		

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
ISTA	11	0854		0913	N02	E02	.099		11.5	19	SN						E
WEND	11	0855	0902	0919D	N03	W01	.112		11.4	24D	SN		C	0902	69	.7	
ISTA	11	0857		0907	N16	E43	.728		14.6	10	SN						E
MONT	11	0858	0900	0907	N17	E41	.711		14.4	9	SN		C	0900	150		H
WEND	11	0859	0900	0910	N17	E42	.721		14.5	11	SN		C	0900	50	.7	
MONT	11	1041	1043	1049	N14	W01	.298		11.5	8	SN		C	1043	70		
PEKG	12	0142	0146	0158	N18	W10	.397		12.8	16	SF		P	0146	55	.6	E
PEKG	12	0143	0146	0155	S15	E45	.745		15.4	12	SF		P	0146	17	.3	D
PEKG	12	0220	0226	0232	N18	E31	.605		14.4	12	SN		C	0226	88	1.1	E
PEKG	12	0315	0316	0324	N11	E36	.623		14.8	9	SN		C	0316	59	.7	E
PEKG	12	0324	0327	0334	S14	E37	.650		14.9	10	SN		C	0327	135	1.8	E
PEKG	12	0330	0343	0348	N18	W08	.385		12.7	18	1N		C	0343	320	3.4	E
PEKG	13	0304	0315	0353	N19	E17	.465		14.4	49	SB		C	0315	126	1.4	E
PEKG	13	0315	0348	0356	N19	W23	.524		14.9	41	1N		C	0348	273	3.2	E
PEKG	13	0440	0446	0505	S03	E78	.979		19.0	25	SN		C	0446	46		D
PEKG	13	0510	0521	0530	N18	W24	.525		15.0	20	1N		C	0521	189	2.3	E
ISTA	13	0807		0825	N19	W23	.524		15.1	18	SN						E
BUCA	13	0855E		0906D	S22	W36	.685		16.1	11D	1F		C	0858	215	3.0	
HOLL	13	1848	1849	1905	S18	W37	.671		16.6	17	SN	3	C		68		
HOLL	13	1851	1851	1956	N01	W37	.605		16.6	65	SN	3	C		23		
PALE	13	1852	1857	1910	N01	W36	.591		16.5	18	SF	3	C		25		
HOLL	13	1858	1902	1906	S01	E72	.952		19.2	8	SF	3	C				
HOLL	13	1907	2002	2147	S19	W38	.687		16.6	160	SN	3	C		62		
PALE	13	1910	1918	1930	N01	W36	.591		16.5	20	SF	3	C		42		
HOLL	13	1922	1923	1944	N18	W31	.604		16.1	22	SB	3	C		24		
PALE	13	1922	1924	1937	N18	W31	.604		16.1	15	SN	3	C		35		D
HOLL	13	1937	1937	1947	S01	E73	.957		19.3	10	SF	3	C				
HOLL	13	2001	2002	2005	S02	E71	.946		19.2	4	SF	3	C		19		
HOLL	13	2014	2014	2024	S17	W74	.969		19.4	10	SF	3	C				
HOLL	13	2041	2047	2057	N01	W39	.632		16.8	16	SF	3	C		21		
PALE	13	2043	2044	2053	N01	W39	.632		16.8	10	SF	3	C		22		
HOLL	13	2111	2112	2126	N16	E10	.367		14.6	15	SN	3	C		26		
HOLL	13	2220	2331	2337D	S19	W40	.709		16.9	77D	1N	3	C		211		
PALE	13	2301	2306	2315	S02	E71	.946		19.3	14	SF	3	C		28		
PALE	13	2301	2306	2319	N01	W35	.577		16.6	18	SF	3	C		60		
HOLL	13	2303	2336	2337D	S02	E71	.946		19.3	34D	1N	2	C				
PALE	13	2306	2308	2328	S04	E71	.947		19.3	22	SF	3	C		23		
HOLL	13	2307	2309	2323	N01	W40	.645		17.0	16	SF	3	C		27		
PALE	13	2315	2318	2328	N18	W32	.615		16.4	13	SF	3	C		37		
LEAR	13	2316	2318	2325	N19	W31	.611		16.3	9	SN	3	C		39		
HOLL	13	2317	2319	2330	N18	W33	.626		16.4	13	SB	3	C		50		
LEAR	13	2320	2334	2358	S19	W38	.687		16.8	38	SN	3	C		74		
LEAR	13	2329	2344	0022	S04	E71	.947		19.3	53	1N	3	C		201		
PALE	13	2331	2339	2344D	S02	E27	.461		16.0	13D	1F	3	C				
LEAR	13	2344	2346	2358	N17	W33	.619		16.5	14	SB	3	C		48		
LEAR	13	2352	2358	0021	N15	E09	.345		14.7	29	1B	3	C		211		
PALE	13	2359	2359	0015	N15	E07	.332		14.5	16	SN	3	C		90		
PALE	14	0037E	0103U	0114D	S02	E74	.962		19.6	37D	1N	3	C		95		
LEAR	14	0056	0103	0123	S03	E71	.947		19.4	27	2B	3	C		216		
LEAR	14	0318	0319	0330	N02	W40	.647		17.1	12	SF	3	C		26		
LEAR	14	0335	0335	0345	N18	E06	.371		14.6	10	SF	3	C		57		
LEAR	14	0345	0346	0353	S18	W41	.713		17.2	8	SN	3	C		36		
LEAR	14	0421	0425	0430	N18	W35	.648		16.8	9	SN	3	C		60		
LEAR	14	0526	0538	0608	N18	E04	.364		14.5	42	1B	3	C		502		
LEAR	14	0540	0544	0608	N19	W35	.654		16.9	28	SB	3	C		58		
PEKG	14	0541E	0541	0600	N18	E03	.362		14.5	19	1N		P	0541	294	3.2	E
LEAR	14	0659	0702	0713	N18	E04	.364		14.6	14	SF	3	C		62		
LEAR	14	0726	0726	0736	N19	W35	.654		16.9	10	SN	3	C		76		
ISTA	14	0803		0812	N19	W37	.676		17.1	9	SN						E
ATHN	14	0900	0902	0905	N02	W39	.633		17.3	5	SB	2	C		64		
ATHN	14	1100	1102	1104D	N02	W39	.633		17.4	4D	SB	2	C		64		
RAMY	14	1222	1227	1303	N18	W01	.359		14.6	41	SN	3	C		91		
RAMY	14	1242	1244	1251	N00	W48	.744		18.1	9	SN	3	C		46		
RAMY	14	1316	1337	1341	S19	W56	.860		18.8	25	SF	3	C		28		
RAMY	14	1331	1332	1341	N00	W48	.744		18.2	10	SN	3	C		20		
RAMY	14	1350	1424	1541D	S18	W54	.840		18.6	111D	1N	3	C		300		
RAMY	14	1351	1352	1410	N13	W12	.341		15.5	19	SF	3	C		27		
RAMY	14	1404	1413	1427	N17	W01	.342		14.7	23	SN	3	C		41		
RAMY	14	1419	1420	1430	N01	W48	.745		18.2	11	SN	3	C		20		

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	DURATION — MIN.	IMPORTANCE	CONF.	TYPE	TIME — UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
HOLL	14	1501	1503	1523	N19	W03	.378		14.9	22	SN	3	C		33		
HOLL	14	1515	1539	1621	S03	E59	.860		19.1	66	SF	3	C		74		
HOLL	14	1616	1616	1623	N01	W49	.756		18.4	7	SF	3	C		19		
HOLL	14	1624	1631	1635	N02	W49	.757		18.4	11	SN	3	C		23		
HOLL	14	1639	1655	1658	N02	W50	.769		18.4	19	SF	3	C		25		
HOLL	14	1651	1702	1740	N14	W41	.695		17.8	49	SN	3	C		122		
HOLL	14	1700	1701	1710	N01	W50	.768		18.5	10	SN	3	C		22		
HOLL	14	1714	1714	1727	N01	W47	.733		18.2	13	SN	3	C		23		
HOLL	14	1826	1826	1834	N01	W48	.745		18.4	8	SF	3	C		21		
HOLL	14	1924E	1928U	1941	N18	W43	.735		18.0	17	SB	3	C		79		
HOLL	14	1924E	1928	1933	S03	E59	.860		19.2	9	SF	3	C		35		
HOLL	14	1926	1930	1936	S18	W54	.840		18.9	10	SF	3	C		62		
HOLL	14	2209E	2219	2257D	N16	W49	.788		18.6	48D	2B	3	C		525		
LEAR	14	2218	2225	2231D	N15	W45	.744		18.3	13D	2B	2	C		652		
PALE	14	2318	2332	0006	S20	W38	.692		17.8	48	SF	3	C		110		
LEAR	14	2320	2334	2358	S19	W38	.687		17.8	38	SN	3	C		74		
LEAR	14	2328	2332	2349	N15	W04	.316		15.3	21	SN	3	C		70		
LEAR	14	2330	2344	0015	S03	E54	.812		19.0	45	1N	3	C		163		
PALE	14	2331	2339	0013	S02	E72	.952		20.4	42	1F	3	C		144		
LEAR	14	2344	2346	2358	N17	W33	.619		17.5	14	SB	3	C		48		
LEAR	14	2352	2358	0021	N15	E09	.343		15.7	29	1B	3	C		211		
PEKG	14	2355	2358	2400	S02	E54	.811		19.0	5	1N		C	2358	147	2.6	E
PALE	14	2359	2359	0015	N15	E07	.330		15.5	16	SN	3	C		90		
PEKG	15	0006E	0006	0010D	N03	W55	.822		19.1	4D	SF		C	0006	50	.9	E
PEKG	15	0106	0108	0112	N17	W48	.781		18.6	6	SN		C	0108	29	.5	D
PEKG	15	0108E	0108	0108D	S07	W90	1.000		21.8		SN		C	0108	50		AD
MANI	15	0138E	0140	0148D	N19	W10	.406		15.8	10D	1B	1	V		250	2.7	F
PEKG	15	0142E	0146	0200	N19	W09	.400		15.7	18	1B		C	0146	239	2.6	F
PEKG	15	0200	0206	0220	S03	E54	.812		19.1	20	SN		C	0206	105	1.9	F
PEKG	15	0239	0240	0247	N22	W41	.733		18.2	8	SN		C	0240	55	.8	E
PEKG	15	0305	0307	0308	N18	W49	.794		18.8	3	SN		C	0307	25	.4	D
PEKG	15	0309	0320	0326	S03	E53	.802		19.1	17	1N		C	0320	143	2.4	E
MANI	15	0429E	0429	0432D	S03	E49	.758		18.9	3D	SN	1	V		60	.9	
RAMY	15	1421	1423	1529	S06	E60	.871		20.1	68	2B	3	C		396		
HOLL	15	1429E	1438	1511	S06	E58	.853		20.0	42	1B	3	C		253		
RAMY	15	1528	1529	1559	N20	W51	.819		19.5	31	SN	3	C		50		
HOLL	15	1529	1532	1543D	N19	W54	.842		19.7	14D	SN	2	C		35		
RAMY	15	1554	1554	1607	N01	W60	.867		20.2	13	SF	3	C		35		
HOLL	15	1648	1648	1700	N17	W53	.828		19.7	12	SN	3	C		20		
RAMY	15	1649	1649	1659	N19	W55	.851		19.8	10	SN	3	C		16		
RAMY	15	1722	1728	1753	N22	W49	.808		19.4	31	SF	3	C		35		
HOLL	15	1726	1729	1733	N23	W49	.812		19.4	7	SF	3	C		18		
HOLL	15	1853	1858	1906	N19	W55	.851		19.9	13	SN	3	C		19		
HOLL	15	2244	2244	2301	S03	E54	.812		20.0	17	SF	3	C		15		
HOLL	15	2320	2325	2328	S18	W76	.977		21.7	8	SF	3	C		0		
LEAR	15	2329	2331	2344	S17	W66	.927		20.9	15	SF	3	C		47		
LEAR	15	2346	2349	0015	N19	W58	.875		20.3	29	SF	3	C		29		
LEAR	16	0037	0049	0109	N20	W58	.877		20.4	32	SN	3	C		52		
PEKG	16	0345	0347	0355	S04	E40	.650		19.2	10	SN		P	0347	92	1.3	E
LEAR	16	0633	0638	0703D	N19	W18	.470		17.6	30D	SF	3	C		113		
PEKG	16	0638	0642	0646	N19	W19	.480		17.7	8	SN		P	0642	101	1.1	E
WEND	16	1240	1246	1259	N18	W21	.489		18.1	19	SF		C	1246	25	.3	
WEND	16	1250	1352	1315	N23	W67	.940		21.6	25	SN		C	1352	94		
WEND	16	1320	1324	1340	N18	W22	.500		18.2	20	SF		C	1324	56	.7	
HOLL	16	1651	1654	1656	N15	W69	.943		21.9	5	SF	3	C		16		
HOLL	16	2025	2027	2028D	N11	W46	.741		20.3	3D	SB	3	C		27		
HOLL	16	2254	2257	2311	N16	W33	.610		19.4	17	SN	3	C		95		
LEAR	16	2255	2257	2312	N16	W33	.610		19.4	17	SN	3	C		56		
LEAR	16	2346	2349	0015	N19	W58	.875		21.3	29	SF	3	C		29		
MANI	17	0203E	0203U	0208D	N19	W72	.961		22.5	5D	SN	1	V		80	1.8	
PEKG	17	0328	0330	0332	S17	W09	.367		17.8	4	SN		P	0330	46	.5	E
PEKG	17	0510	0512	0520	S16	W15	.404		18.3	10	SN		P	0512	160	1.8	E
PEKG	17	0541	0548	0550	S17	W53	.828		21.2	9	SN		P	0548	105	1.9	E
PEKG	17	0740	0746	0800	N20	W78	.984		23.2	20	1F		P	0746	63		E
WEND	17	0904	0908	0921	N17	W32	.604		19.8	17	SN		C	0908	31	.4	
WEND	17	0942	0947	0951	N17	W33	.616		19.9	9	SF		C	0947	50	.6	
MONT	17	0942	0945	0950	N17	W32	.604		19.8	8	SF		C	0945	50		
WEND	17	1047	1050	1055	S02	E22	.382		19.1	8	SF		C	1050	38	.4	
WEND	17	1155	1156	1201	N18	W80	.989		23.5	6	SF		C	1156	13		

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION — MIN.	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY			CONF.	TYPE	TIME — UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
WEND	17	1420	1423	1427	S13	W61	.887		22.2	7	SF		C	1423	31	.7	
HOLL	17	2321	2322	2330	S14	W67	.930		23.0	9	SB	2	C		74		
LEAR	17	2321	2322	2330	S14	W65	.917		22.8	9	SN	3	C		58		
LEAR	17	2328	2328	2341	N18	W81	.991		24.1	13	SB	3	C				D
LEAR	17	2328	2328	2331D	N17	W72	.959		23.4	3D	SB	3	C				D
LEAR	18	0036	0050	0054	N19	W82	.993		24.2	18	SF	3	C				
LEAR	18	0043	0043	0050	S18	W20	.476		19.5	7	SN	3	C		30		
LEAR	18	0057	0058	0132	S02	E14	.254		19.1	35	SN	3	C		77		
LEAR	18	0122	0124	0138	S18	W20	.476		19.6	16	SB	3	C		136		
LEAR	18	0217	0221	0228	S05	E13	.259		19.1	11	SF	3	C		66		
LEAR	18	0231	0234	0239	S15	W65	.918		23.0	8	SN	3	C		26		
LEAR	18	0249	0253	0307	S17	W66	.927		23.1	18	SN	3	C		46		
MANI	18	0307E	0307U	0312D	S05	E05	.157		18.5	5D	SF	1	V		50	.5	
LEAR	18	0413	0418	0438	S19	W24	.529		20.0	25	1B	3	C		204		
LEAR	18	0501	0502	0505	S06	E16	.311		19.4	4	SF	3	C		78		
LEAR	18	0601	0603	0611	S06	E08	.202		18.9	10	SN	3	C		48		
LEAR	18	0615	0618	0641	S18	W69	.945		23.4	26	SN	3	C		32		
LEAR	18	0623	0626	0632	N19	W49	.796		21.9	9	SF	3	C		51		
LEAR	18	0651	0654	0700	S13	W67	.929		23.3	9	SF	3	C		33		
LEAR	18	0723	0724	0737	S17	W25	.522		20.2	14	SN	3	C		35		
LEAR	18	0828E	0829U	0843	S15	W22	.469		20.0	15	SN	3	C		164		
MONT	18	0828E	0828	0840	S16	W23	.490		20.1	12	SN		C	0828	70		
MONT	18	0906	0908	0917	S06	E05	.172		18.8	11	SN		C	0908	220		H
LEAR	18	0907	0909	0918	S06	E05	.172		18.8	11	1N	3	C		244		
LEAR	18	0927	0927	0934	S19	W69	.946		23.6	7	SN	3	C		49		
MONT	18	0935	0939	1000D	S03	E10	.198		19.1	25D	SN		C	0939	220		
LEAR	18	0936	0938	1008	S03	E10	.198		19.1	32	SN	3	C		190		
MONT	18	1023	1026	1039	S19	W33	.628		20.9	16	SN		C	1026	70		
HOLL	18	1517	1651	1853	S18	W31	.599		21.0	216	1N	2	C		197		
PALE	18	1830	1831	1910	S17	W32	.604		21.2	40	SN	3	C		69		
HOLL	18	2245	2247	2257	S15	W76	.975		24.6	12	SF	3	C				
LEAR	19	0206	0209	0227	S06	E01	.147		19.2	21	SN	3	C		95		
LEAR	19	0208	0209	0243	S17	W36	.649		21.8	35	SN	3	C		55		
PEKG	19	0251E	0252	0255D	S16	W39	.678		22.0	4D	1N		P	0252	126	1.8	EU
LEAR	19	0628	0630	0636	N18	W63	.908		24.0	8	SF	3	C		34		
LEAR	19	0756	0759	0809	S16	W40	.690		22.3	13	SN	3	C		21		
LEAR	19	0914	0919	0932	N11	W79	.984		25.3	18	SF	3	C				
MONT	19	1048	1051	1057	N11	W86	.998		25.9	9	SF		C	1051	50		D
HOLL	19	1633	1633	1639	S05	W07	.177		20.2	6	SF	3	C		40		
HOLL	19	1640	1641	1643	N10	W82	.992		25.8	3	SF	3	C				
HOLL	19	1640	1640	1645	S17	W44	.738		23.0	5	SN	3	C		19		
HOLL	19	2005	2016	2026	S02	W10	.189		20.6	21	SF	3	C		57		
HOLL	19	2020	2022	2026	S17	W47	.769		23.4	6	SN	3	C		17		
LEAR	19	2333	2335	0006	S17	W50	.799		23.7	33	SF	3	C		34		
PEKG	20	0019E	0020	0020D	S16	W51	.805		23.8	1D	1N		P	0020	126	2.2	E
LEAR	20	0143	0144	0151	N14	E10	.327		20.8	8	SF	3	C		75		
PEKG	20	0344	0350	0355	S05	W19	.347		21.6	11	SF		C	0350	34	.4	D
PEKG	20	0452E	0452	0459	S15	W54	.831		24.3	7	SN		P	0452	97	1.8	EU
HOLL	20	1526	1530	1542	S20	W53	.834		24.6	16	SB	3	C		61		
HOLL	20	1531	1533	1542	N14	E01	.281		20.7	11	SN	3	C		30		
HOLL	20	1759	1802	1815	N14	E00	.280		20.7	16	SN	3	C		90		
HOLL	20	1859	1904	1920	N15	W01	.298		20.9	21	SF	3	C		21		
LEAR	20	2246	2246	2307	S20	W57	.867		25.2	21	SF	3	C		40		
LEAR	20	2333	2335	0006	S17	W50	.798		24.7	33	SF	3	C		34		
PALE	20	2349	2349	2355	S18	W63	.908		25.7	6	SF	3	C		17		
LEAR	21	0220	0222	0236	S04	W27	.464		23.1	16	SF	3	C		33		
LEAR	21	0348	0350	0356	N10	W05	.227		21.5	8	SN	3	C		77		
LEAR	21	0732	0733	0738	S15	W69	.942		26.5	6	SF	3	C		21		
LEAR	21	0956	0957	1002	S05	W30	.512		23.7	6	SF	3	C		32		
RAMY	21	1253	1303	1329	S02	W34	.563		24.1	36	SF	3	C		65		
RAMY	21	1333	1335	1340	S20	W66	.929		26.5	7	SF	3	C		28		
RAMY	21	1554	1558	1612	N12	W13	.328		22.6	18	SB	3	C		89		
HOLL	21	1556	1600	1612	N11	W13	.316		22.6	16	SB	3	C		100		
HOLL	21	1651	1652	1657	S21	W68	.942		26.8	6	SN	3	C		17		
HOLL	21	1710	1713	1725	S20	W73	.965		27.2	15	SF	3	C				
HOLL	21	2000	2002	2018	N11	E00	.228		21.8	18	SN	3	C		33		
HOLL	21	2014	2014	2018	S19	W73	.965		27.3	4	SF	3	C				

Hα SOLAR FLARES

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
					APPROX.		CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY								
	DAY	START	MAX. PHASE	END	LAT.	MER. DIST.				MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
LEAR	21	2244	2249	2258	S18	W70	.950		27.2	14	SN	3	C		20		
LEAR	22	0048	0049	0053	N10	E80	.986		28.0	5	SF	3	C				
LEAR	22	0104	0108	0115	S03	W41	.660		25.1	11	SF	3	C		45		
LEAR	22	0242	0246	0300	N11	W18	.377		23.5	18	SN	3	C		85		
LEAR	22	0322	0324	0338	S20	W72	.961		27.5	16	1B	3	C				
LEAR	22	0414	0416	0423	S19	W74	.969		27.7	9	SN	3	C				
LEAR	22	0425	0426	0430	S19	W73	.964		27.7	5	SF	3	C				
LEAR	22	0655	0658	0830	N12	W22	.438		23.9	95	1B	3	C		492		
ATHN	22	0656E	0658U	0801D	N13	W19	.409		23.7	65D	SB	3	C		127		
MANI	22	0703E	0703U	0705D	N12	W21	.425		23.9	2D	1N	1	V		250	2.8	FZ
LEAR	22	0704	0706	0712	N06	E75	.967		27.9	8	SF	3	C				
ATHN	22	0730	0732U	0755	N13	W19	.409		23.7	25	1B	3	C		223		
LEAR	22	0947	1010	1012D	S05	W38	.624		25.3	25D	1F	2	C		228		
LEAR	22	0947	1002	1004D	S04	W44	.699		25.7	17D	1F	2	C		209		
ATHN	22	1000E	1004U	1015D	S04	W39	.635		25.3	15D	SN	3	C		116		
RAMY	22	1123	1125	1205	S05	W46	.725		25.9	42	SF	3	C		195		
RAMY	22	1205	1208	1221	S19	W77	.980		28.3	16	SN	3	C				
RAMY	22	1216	1220	1229	N10	W23	.436		24.2	13	SN	3	C		42		
HOLL	22	1537	1538	1559	N11	W26	.484		24.6	22	SB	3	C		110		D
RAMY	22	1538	1539	1550	N11	W26	.484		24.6	12	SN	3	C		94		
HOLL	22	1847	1852	1856	N11	W27	.498		24.8	9	SF	3	C		37		
RAMY	22	1847	1851	1855	N11	W27	.498		24.8	8	SF	3	C		30		
HOLL	22	2053	2057	2105	S06	W52	.794		26.8	12	SN	3	C		38		
HOLL	22	2236	2237	2245	S20	W84	.996		29.2	9	SN	3	C				
PEKG	23	0101	0109	0110	S18	W90	1.000		29.8	9	SN		C				
PEKG	23	0101	0104	0110	S18	W90	1.000		29.8	9	SN		C	0104	34		ADK
LEAR	23	0104	0108	0109	S21	W82	.993		29.2	5	SF	3	C				
PEKG	23	0244	0245	0248	S19	W90	1.000		29.9	4	SN		C	0245	38		AD
LEAR	23	0626	0626	0642	N11	W34	.591		25.8	16	SN	3	C		103		
WEND	23	0945	0950	1004	N12	W33	.582		25.9	19	SN		C	0950	31	.4	
MONT	23	0946	0949	1006	N11	W37	.629		26.2	20	SB		C	0949	50		
LEAR	23	0948	0950	1001	N11	W35	.604		26.0	13	SN	3	C		91		
RAMY	23	1148	1156	1238	N07	E57	.844		27.8	50	1B	3	C		219		
ATHN	23	1155E	1158U	1200D	N07	E57	.844		27.8	5D	SB	4	C		127		
RAMY	23	1309	1322	1359	N13	W37	.638		26.3	50	SN	3	C		83		
ATHN	23	1315E	1317U	1318D	N19	W32	.612		26.0	3D	SB	4	C		64		
RAMY	23	1531	1538	1558	N11	W40	.667		26.6	27	SN	3	C		28		
HOLL	23	1945	1951	2008	N13	E51	.796		27.6	23	SF	3	C		22		
HOLL	23	2029	2036	2040	S08	W63	.896		28.6	11	SF	3	C		17		
LEAR	23	2330	2331	2340	N11	W43	.703		27.2	10	SF	3	C		37		
PEKG	24	0110	0121	0125	S22	W90	1.000		30.8	15			P	0121			A
ISTA	24	0718		0740	N12	W49	.773		28.0	22	SN						E
LEAR	24	0950	0953	1001	S17	W63	.905		29.1	11	SF	3	C		22		
RAMY	24	1453	1453	1459	S12	E90	1.000		1.4	6	SF	3	C				
RAMY	24	1507	1511	1553	N11	E42	.691		27.8	46	SN	3	C		39		
RAMY	24	1510	1511	1530	N08	E39	.644		27.6	20	SF	3	C		31		
HOLL	24	1723	1730	1805D	N11	E41	.679		27.8	42D	SN	3	C		42		
HOLL	24	2033	2040	2118	N11	E40	.666		27.9	45	1B	3	C		243		
HOLL	24	2214	2217	2225	N13	W59	.869		29.4	11	SF	3	C		15		
LEAR	25	0154	0203	0209	S07	E75	.967		30.7	15	SN	3	C				
LEAR	25	0520	0522	0546	N14	W57	.853		29.5	26	1B	3	C		190		
ATHN	25	0745	0749	0814	S07	E70	.942		30.6	29	SB	3	C		95		
LEAR	25	0749E	0749U	0752D	S09	E72	.954		30.7	3D	1F	2	C				
ISTA	25	0827		0843	N13	E33	.586		27.8	16	SF						E
LEAR	25	0828	0831	0853	N11	E32	.563		27.8	25	1F	3	C		214		
ATHN	25	0830	0835	0914	N12	E32	.568		27.8	44	SB	3	C		175		
RAMY	25	1208	1210	1227	S08	E68	.930		30.6	19	SF	3	C		35		
RAMY	25	1253	1255	1341	N14	W65	.915		30.4	48	SN	3	C		25		
RAMY	25	1456	1459	1533	N13	W65	.914		30.5	37	SF	3	C		49		
RAMY	25	1531	1531	1543	S04	E68	.928		30.7	12	SF	3	C		31		
BOUL	25	1816	1820	1827	S07	E68	.930		30.9	11	1N	2	C		135		
RAMY	25	1819E	1819U	1835	S08	E65	.910		30.6	16	1B	3	C		264		
MANI	25	2325E	2325	2353D	N10	E24	.448		27.8	28D	SB	1	V		130	1.5	F
PEKG	26	0754	0758	0805	N14	W80	.987		2.3	11	SN		P	0758	55		D
LEAR	26	0930E	0933	0958	S15	E74	.966		1.9	28	SN	3	C				
MONT	26	0930	0934	0945	S15	E76	.974		2.1	15	SF		C	0934	50		D
LEAR	26	0935	0947	1006	N11	E19	.386		27.8	31	SF	3	C		113		

Hα SOLAR FLARES

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
MONT	26	0941	0946	1000	N11	E19	.386		27.8	19	SN		C	0946	110		
LEAR	26	1000	1007	1014D	S09	E64	.903		1.2	14D	SF	2	C		36		
ATHN	26	1001	1005	1018	S16	E69	.942		1.6	17	SB	2	C		64		
HOLL	26	1433	1433U	1456	S13	E69	.939		1.8	23	1F	1	C		153		
HOLL	26	1615	1621	1714	N13	E11	.312		27.5	59	2B	3	C		547		
HOLL	26	1734	1734	1749	S12	E60	.875		1.2	15	SN	3	C		26		
HOLL	26	1750	1750	1756	N11	E13	.309		27.7	6	SF	3	C		31		
HOLL	26	1800	1801	1832	S08	E58	.854		1.1	32	SN	3	C		57		
HOLL	26	1926	1944	2006	S06	E50	.772		30.6	40	1B	3	C		330		
PALE	26	1927	1945	2006	S07	E50	.773		30.6	39	2N	2	C		352		
HOLL	26	1955	1958	2000	N09	W82	.991		3.0	5	SF	3	C				
PALE	26	2326	2329	2336	S07	E60	.870		1.5	10	SN	2	C		68		
PEKG	27	0200	0230	0500	N20	E90	1.000		3.8	180			P				A
MANI	27	0220	0220	0223D	N06	E07	.177		27.6	3D	SN	1	V		30	.3	
RAMY	27	1351	1401	1422	N10	E03	.204		27.8	31	SF	3	C		71		
RAMY	27	1358	1401	1415	N06	E03	.139		27.8	17	SF	3	C		39		
RAMY	27	1723	1724	1735	N11	W01	.216		27.8	12	SF	3	C		127		
PALE	28	0130E	0135U	0227	S14	E43	.710		1.3	57	SN	2	C		47		
LEAR	28	0220	0221	0226	S12	E43	.704		1.3	6	SN	3	C		60		
PEKG	28	0240	0247	0250	S10	E36	.610		30.8	10	SN		P	0247	63	.9	E
LEAR	28	0407	0413	0421	N11	W07	.244		28.7	14	SF	3	C		79		
PEKG	28	0505	0515	0534	S05	E45	.712		1.6	29	SN		C	0515	46	.7	D
LEAR	28	0617	0618	0623	N11	W09	.262		28.9	6	SF	3	C		28		
PEKG	28	0630	0635	0640	S15	E90	1.000		5.0	10			C	0635			A
PEKG	28	0643	0645	0647	N11	W01	.214		28.4	4	SN		C	0645	55	.6	E
LEAR	28	0727	0729	0751	S12	E43	.704		1.5	24	SN	3	C		81		
LEAR	28	0921	0947	1020D	N09	W13	.285		29.4	59D	1B	3	C		328		
ATHN	28	0943E	0947	1024	N12	W09	.276		29.1	41	1B	1	C		207		
PALE	28	2048	2049	2054	S22	W08	.416		29.5	6	SF	3	C		26		
PALE	28	2104	2115	2123	N11	W18	.370		30.2	19	SN	3	C		36		
PALE	28	2115	2119	2122	S13	E60	.876		3.4	7	SN	3	C		32		
PALE	28	2153	2155	2209	S11	E36	.614		1.6	16	SN	3	C		82		D
LEAR	28	2315	2317	2327	N09	W17	.339		30.2	12	SF	3	C		31		
PALE	28	2317	2322	2333	N08	W17	.331		30.2	16	SF	2	C		26		D
LEAR	29	0043	0046	0048	S21	W09	.404		29.7	5	SF	3	C		59		
LEAR	29	0919	0921	0933	S13	E25	.478		1.3	14	1B	2	C		345		
RAMY	29	1600	1615	1647	N13	W28	.518		1.8	47	SN	3	C		42		
RAMY	29	1813	1814	1832	N13	W31	.557		2.1	19	SB	3	C		98		
RAMY	29	1817	1824	1841	S11	E14	.317		30.8	24	SF	3	C		47		
RAMY	29	1821	1822	1834	N19	E79	.985		5.7	13	SF	3	C				
PALE	29	1822E	1822U	1837	S11	E14	.317		30.8	15	SF	2	C		31		
RAMY	29	1835	1839	1852	N10	W30	.528		2.0	17	SF	3	C		53		
RAMY	29	1916	1917	1929	N10	W30	.528		2.1	13	SF	3	C		44		
PALE	29	1926	1931	1939	S10	E17	.346		1.1	13	SB	3	C		42		
RAMY	29	1928	1931	1945	S11	E15	.330		30.9	17	SB	3	C		73		
RAMY	29	1955	1956	2005	N15	E05	.291		30.2	10	SN	3	C		34		
PALE	29	2327	2330	2344	S11	E10	.271		30.7	17	SF	3	C		31		
PALE	30	0019E	0026	0048	S10	E20	.387		1.5	29	SF	2	C		51		D
PEKG	30	0110	0115	0135	S10	E10	.257		30.8	25	SN		C	0115	42	.4	D
PEKG	30	0202	0207	0225	S09	E09	.233		30.8	23	SN		C	0207	92	1.0	E
PALE	30	0203	0205	0216	N16	E02	.295		30.2	13	SF	2	C		74		D
PALE	30	0204	0206	0225	S10	E09	.246		30.8	21	SN	2	C		86		
LEAR	30	0205	0210	0230	S11	E13	.303		1.1	25	SB	3	C		120		
PEKG	30	0208	0209	0216	S12	E14	.327		1.1	8	SN		C	0209	109	1.2	E
PEKG	30	0520	0523	0533	N17	E03	.314		30.4	13	SN		P	0523	46	.5	D
LEAR	30	0529	0531	0541	N13	W37	.633		3.0	12	SF	2	C		44		
LEAR	30	0759	0803	0821	S15	E42	.701		3.5	22	SF	2	C		117		
LEAR	30	0827	0831	0856	N17	E00	.310		30.4	29	SN	2	C		181		
MONT	30	0830E	0830	0846	N17	W01	.310		30.4	16	SN		C	0830	110		B
MONT	30	0851	0856	0906	S11	E11	.280		1.2	15	SB		C	0856	70		E
LEAR	30	0851	0856	0905	S12	E11	.293		1.2	14	SN	2	C		95		
MONT	30	0941	0943	0954	N16	W02	.295		30.6	13	SN		C	0943	110		
LEAR	30	0943	0944	1016	N16	E01	.294		30.5	33	1N	2	C		244		
RAMY	30	1200	1227	1250	N16	W05	.305		30.9	50	SN	3	C		132		
RAMY	30	1207	1216	1224	S11	E10	.269		1.3	17	1N	3	C		269		
RAMY	30	1320	1322	1352	N16	W06	.310		1.0	32	SF	3	C		88		
RAMY	30	1348	1358	1359	N19	E72	.958		6.0	11	SF	3	C				
RAMY	30	1358	1402	1422	N14	W02	.262		30.7	24	SN	3	C		82		

Hα SOLAR FLARES

NOVEMBER 1981

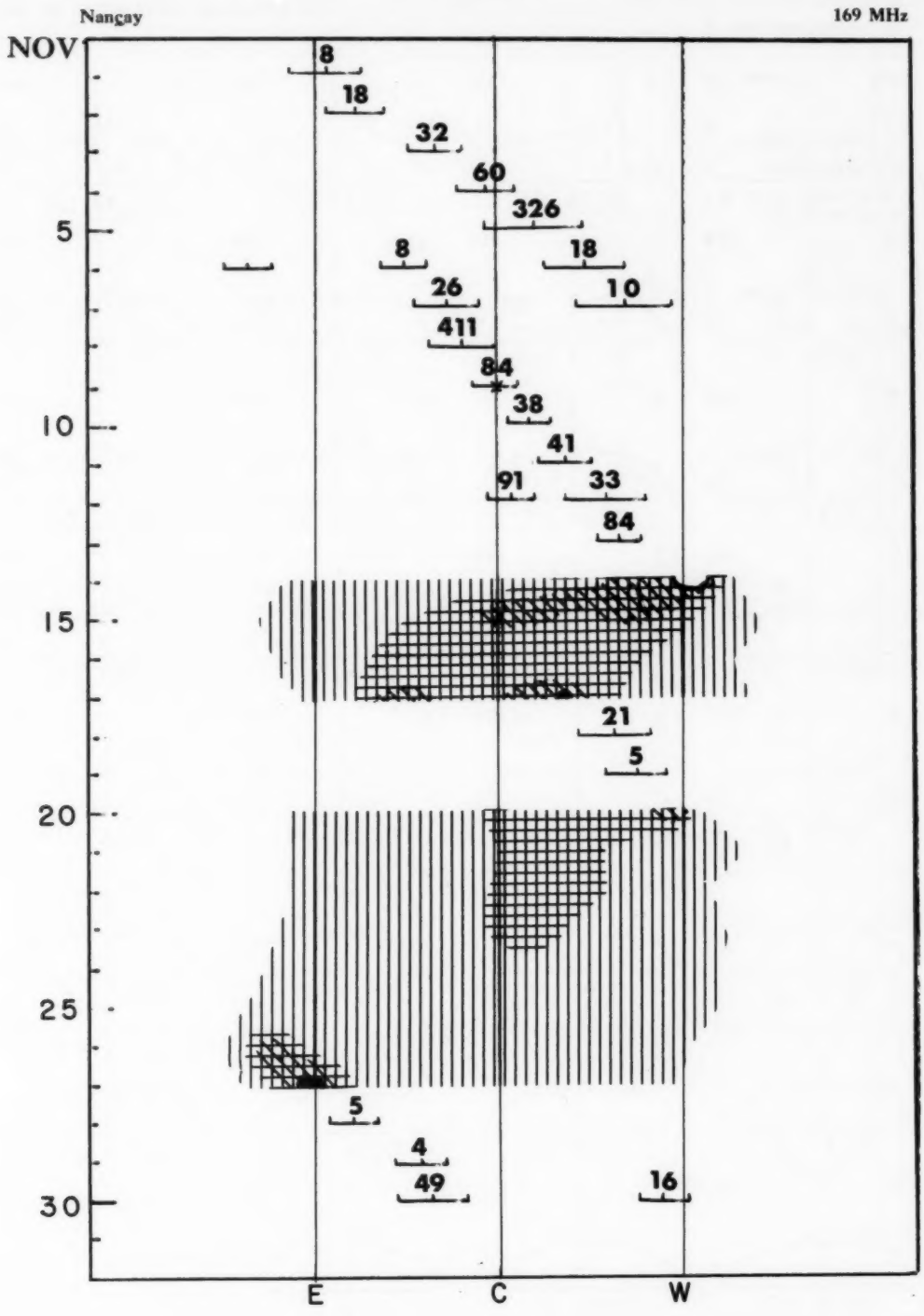
OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		CONF.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
HOLL	30	1604	1613	1638	N16	W08	.322		1.3	34	SN	3	C		95		
HOLL	30	1644	1644	1648	N19	E64	.913		5.5	4	SF	3	C		12		
HOLL	30	1913	1925U	1939	S11	E09	.259		1.5	26	SF	3	C		28		
HOLL	30	1937	1950	2029	N21	E70	.950		6.1	52	SN	3	C		87		
HOLL	30	1955	1956	2005	N16	W10	.337		1.6	10	SN	3	C		36		
HOLL	30	2009	2011	2025	N16	W10	.337		1.6	16	SN	3	C		70		
HOLL	30	2019	2021	2031	S11	E08	.249		1.4	12	SF	3	C		32		
HOLL	30	2137	2139	2154	N09	E81	.988		7.0	17	SF	3	C				
HOLL	30	2141	2244	2321D	N16	W11	.345		1.7	100D	SN	3	C		91		
HOLL	30	2155	2157	2213	N13	W48	.762		4.5	18	SN	3	C		53		
LEAR	30	2244	2244	2313	N15	W10	.323		1.7	29	SF	3	C		27		
HOLL	30	2300	2300	2307	S10	W02	.195		1.1	7	SF	3	C		23		
HOLL	30	2301	2311	2321D	N20	E67	.933		6.0	20D	SF	3	C		32		
HOLL	30	2315	2316	2321D	S09	W02	.178		1.1	6D	SF	3	C		33		

"REMARKS":

A = Eruptive prominence whose base is less than 90° from central meridian.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No visible spots in the neighborhood.
H = Flare accompanied by high-speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the H and K lines of CaII.
P = Flare shows helium D3 in emission.
Q = Flare shows Balmer continuum in emission.
R = Marked asymmetry in H-alpha line suggests ejection of high-velocity material.
S = Brightness follows disappearance of filament in same position.
T = Region active all day.
U = Two bright branches, parallel or converging.
V = Occurrence of an explosive phase: important, expansion within roughly 1 minute that often includes a significant intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide H-alpha line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

NOVEMBER 1981



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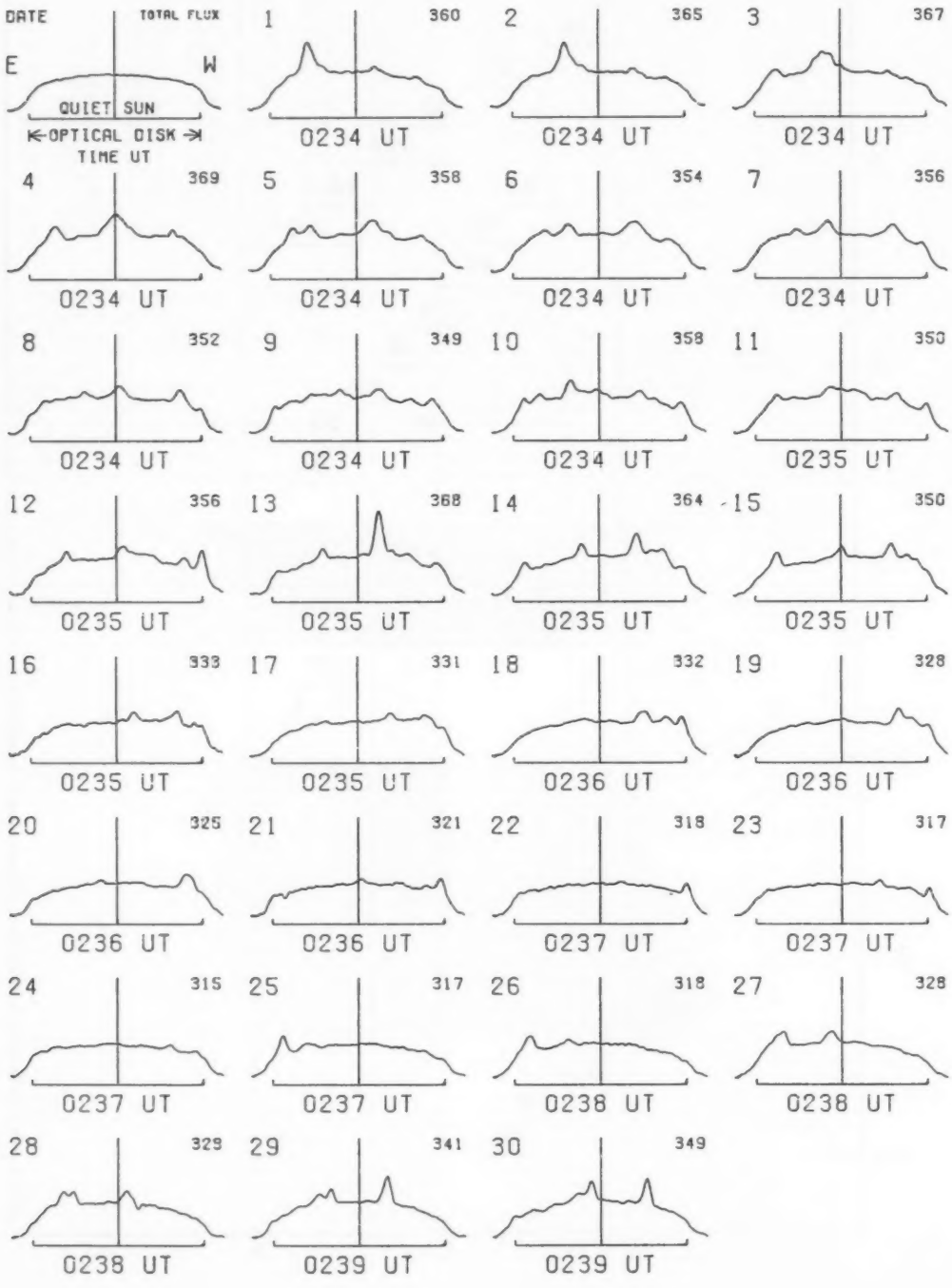
Nov 81

EAST-WEST SOLAR SCANS

NOVEMBER 1981

TOYOKAWA, JAPAN

3 CM
FAN BEAM WITH 1.1 MINUTES OF ARC

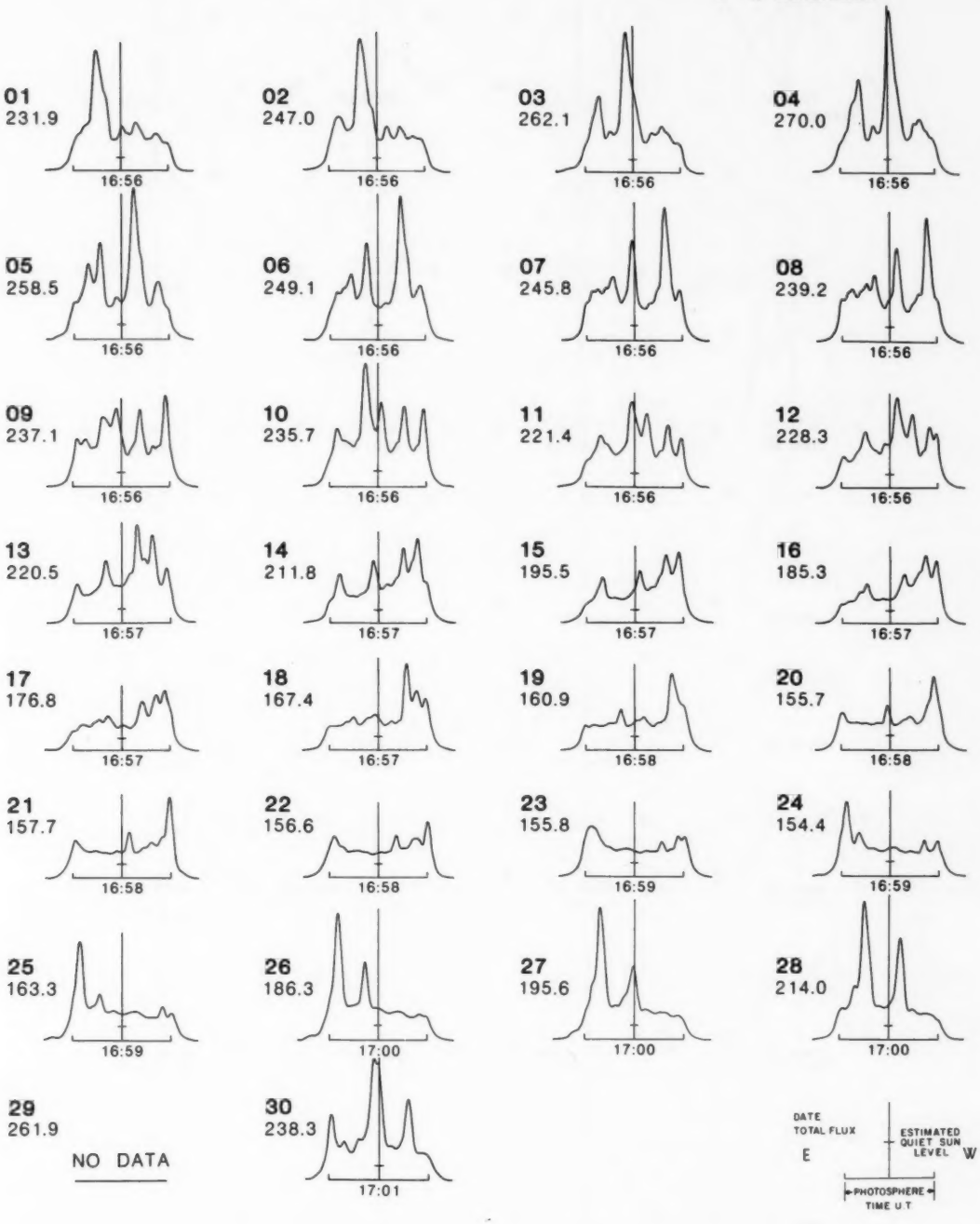


EAST-WEST SOLAR SCANS

NOVEMBER 1981

ALGONQUIN RADIO OBSERVATORY
CANADA

10·7 cm
Fan Beam with 1·5 minutes of arc
E-W Resolution



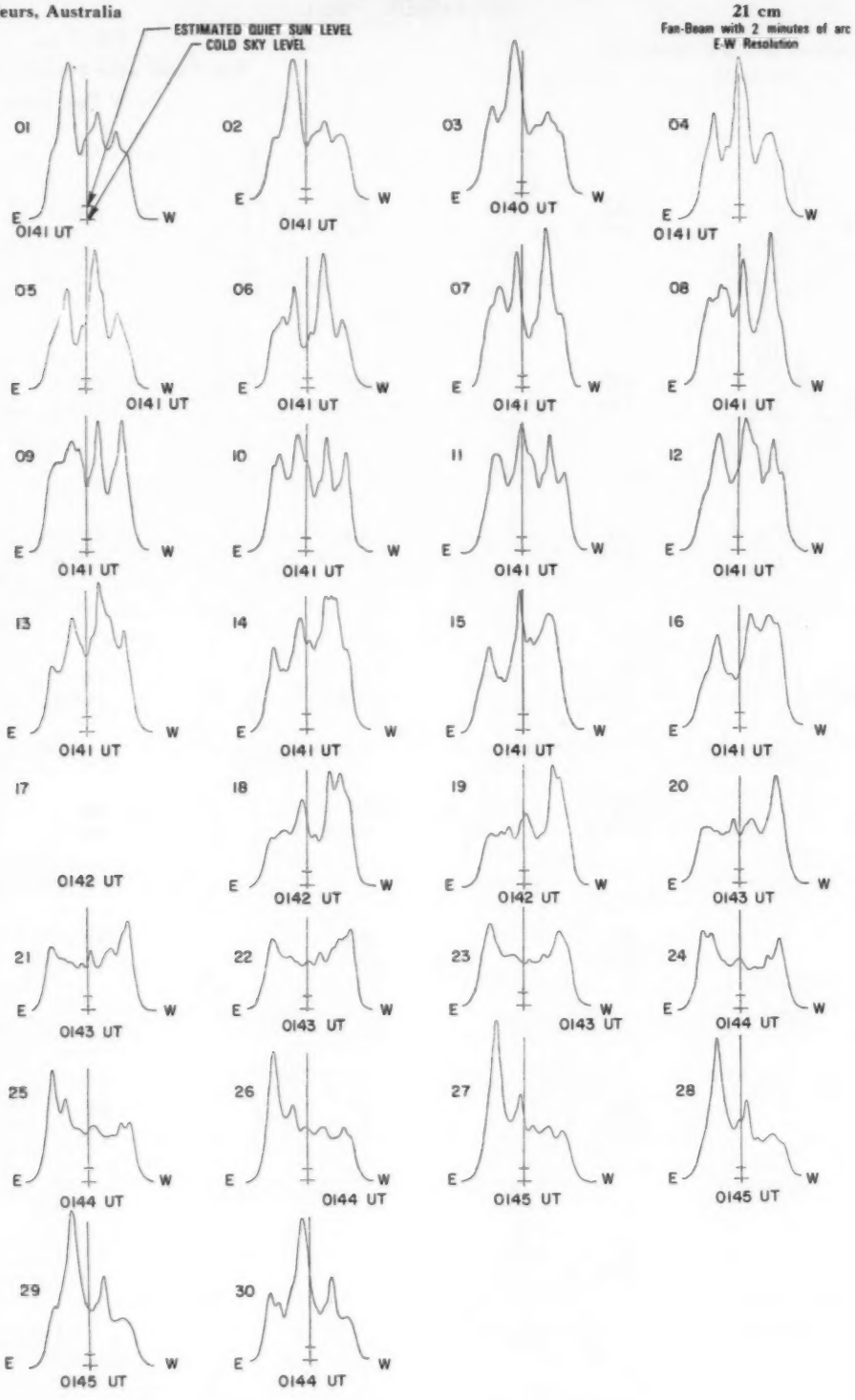
28
Nov 81

EAST-WEST SOLAR SCANS

NOVEMBER 1981

Fleurs, Australia

21 cm
Fan-Beam with 2 minutes of arc
E-W Resolution

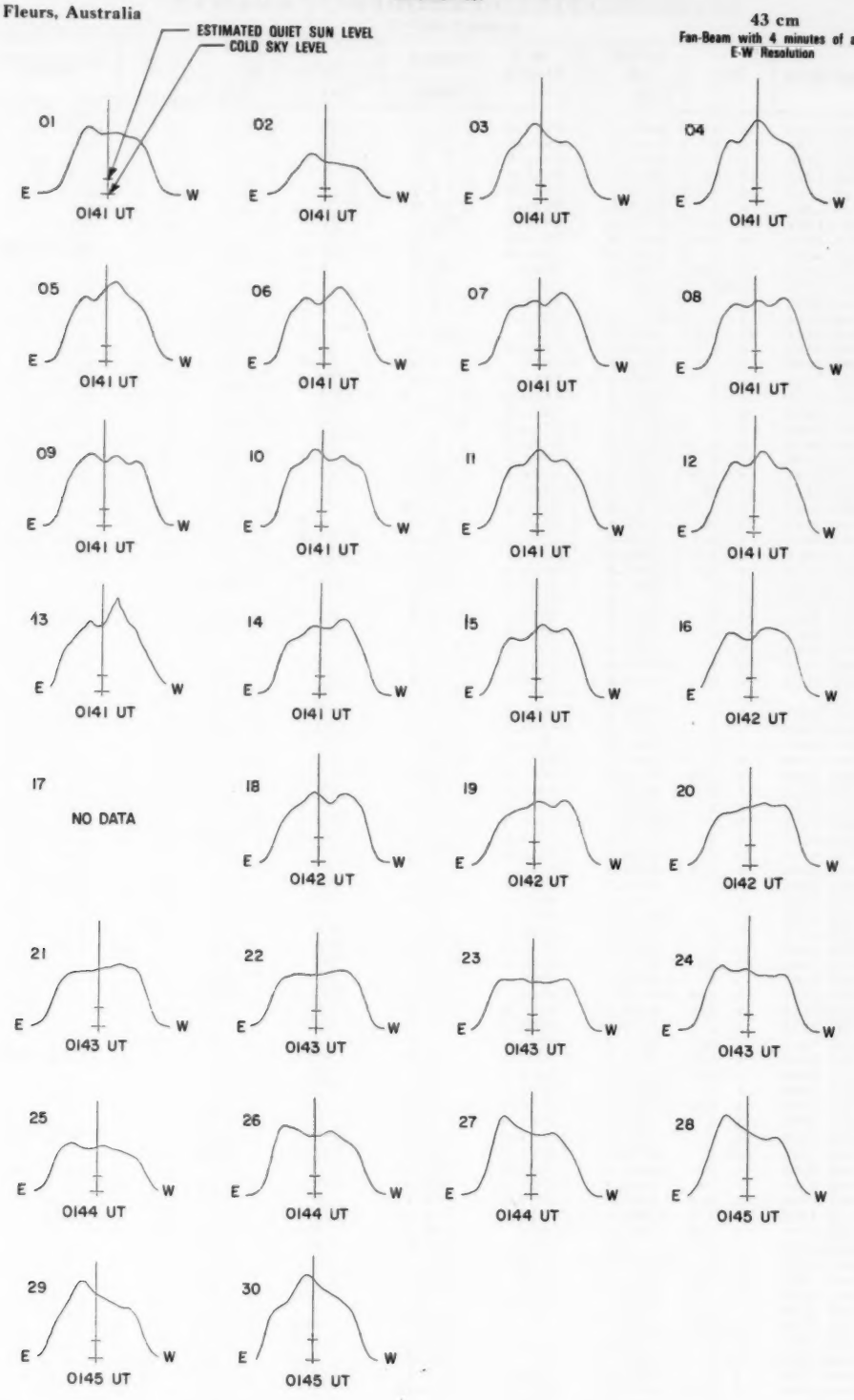


EAST-WEST SOLAR SCANS

NOVEMBER 1981

Fleurs, Australia

43 cm
Fan-Beam with 4 minutes of arc
E-W Resolution



SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

NOVEMBER 1981

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	REMARKS
01	8800	LEAR	4 S/F	0443.1	0443.1	4.5	20			
	2695	LEAR	8 S	0443.6	0444.5	1.5	08			
	8800	LEAR	8 S	0459.3	0459.5	.8	27			
	2695	LEAR	47 GB	0610.3	0610.6	1.7	11			
	8800	LEAR	4 S/F	0635.5	0635.8	3.5	38			
	2695	LEAR	8 S	0635.6	0635.8	1.0	11			
	15400	LEAR	4 S/F	0635.8	0635.8	551.6	13			
	2695	LEAR	4 S/F	0918.3	0919.5	5.2	17			
	3200	BERN	3 S	1227.0	1233.0	11.0	11.0			ONLY PAPER REC
	2800	OTTA	22 GRF	1350.0	1400	95.0	3.6			
	2800	OTTA	24OAR	1533.0	1550	17.0	3.6			
	2800	OTTA	2 S/F	1533.5	1535.3	3.5	2.6			
	2800	OTTA	1 S	1553.0	1553.2	1.0	3.2	1.4		
	2800	OTTA	23 GRF	1615.0	1755	125.0	7.8	3.9		
	8800	SGMR	8 S	1722.8	1723.0	.5	18			
	2800	OTTA	4 S/F	1811.0	1813	5.0	53.0	13.4		
	8800	PALE	8 S	1812.3	1812.6	1.0	220			
	8800	SGMR	8 S	1812.3	1812.6U	D	170			
	2695	PALE	8 S	1812.5	1813.0	1.1	48			
	2695	SGMR	8 S	1812.5	1813.1U	D	49			
	8800	PALE	8 S	2105.3	2106.1	1.2	50			
	2800	OTTA	45 C	2105.5	2106.3	9.5	59.0	27.0		
	2695	SGMR	4 S/F	2105.5	2106.1	2.3D	63			
	2695	PALE	47 GB	2105.5	2106.1	8.6	62			
	8800	SGMR	8 S	2105.6	2106.1	.9D	42			
	2695	PENT	29 PBI	2115.0	2115	75.0	7.2			
	2695	PENT	4 S/F	2254.5	2255.3	4.0	69.0	14.0		
	8800	PALE	4 S/F	2254.8	2255.1	2.5	400			
	2695	PALE	4 S/F	2254.8	2255.1	3.3	74			
	8800	MANI	3 S	2254.8	2255.3	1.7	420.7	140.2		
	2695	LEAR	47 GB	2254.8	2255.1	3.5	70			
	8800	LEAR	47 GB	2254.8	2255.1	2.0	360			
	2695	MANI	3 S	2255.0	2255.2	4.0	78.5	26.2		
	2695	PALE	8 S	2320.8	2320.8	.2	13			
	8800	PALE	8 S	2320.8	2321.5	1.0	24			
	8800	PALE	4 S/F	2324.1	2326.8	3.4	24			
02	8800	LEAR	8 S	0045.3	0045.6	1.7	50			
	8800	MANI	3 S	0045.8	0046.3	1.2	52.6	17.5		
	2695	MANI	3 S	0045.8	0046.3	1.2	15.7	5.2		
	2695	LEAR	8 S	0046.1	0046.3	1.0	13			
	8800	LEAR	4 S/F	0144.6	0145.6	2.4	210			
	2695	LEAR	8 S	0145.3	0145.6	1.8	49			
	2695	PALE	8 S	0145.3	0145.6	.8	46			
	8800	PALE	8 S	0145.3	0145.5	.8	210			
	8800	MANI	3 S	0146.3	0146.8	1.2	231.5	77.2		
	2695	MANI	3 S	0146.3	0146.8	1.2	48.2	16.1		
	2695	LEAR	4 S/F	0149.3	0150.1	2.7	10			
	8800	LEAR	8 S	0149.6	0150.1	1.2	06			
	8800	LEAR	8 S	0242.0	0242.1	.8	11			
	8800	LEAR	47 GB	0307.5	0308.5	5.6	190			
	2695	PALE	8 S	0308.3	0308.6	1.5	100			
	8800	PALE	8 S	0308.3	0308.3	.8	220			
	2695	LEAR	47 GB	0308.3	0308.6	3.8	88			
	2695	MANI	3 S	0309.2	0309.9	4.6	80.4	26.8		
	8800	MANI	4 S/F	0309.2	0309.9	4.8	105.2	61.7		
	8800	LEAR	4 S/F	0350.1	0351.8	4.0	17			
	2695	LEAR	8 S	0350.3	0350.3	1.7	13			
	2695	MANI	4 S/F	0351.3	0351.6	.7	10.7	3.6		
	3200	BERN	4 S/F	1207.5	1213.1	12.0	36.0			ONLY PAPER REC
	2695	ATHN	4 S/F	1213.3	1214.3	5.2	38			
	8800	SGMR	8 S	1213.6	1213.6	1.4	68			
	2695	SGMR	4 S/F	1214.3	1214.5	3.2	61			
	2800	OTTA	1 S	1306.0	1308.3	5.0	5.8	2.0		
	3200	BERN	45 C	1500.0	1503.5	13.0	110.0			ONLY PAPER REC
	2800	OTTA	46F C	1500.5	1503.8	14.0	132.0	23.0		
	2695	SGMR	47 GB	1501.3	1503.8	12.5D	130			
	8800	SGMR	47 GB	1502.3	1503.6	11.5D	160			
	8800	ATHN	4 S/F	1502.5	1503.6	4.3	110			
	8800	ATHN	4 S/F	1502.5	1503.6	4.3	110			
	2800	OTTA	21 GRF	1615.0	1640	50.0	4.6	1.6		
	2800	OTTA	4 S/F	1619.0	1620	25.0	10.3	3.0		
	2695	SGMR	8 S	1621.8	1622.0	.3	20			
	2800	OTTA	23 GRF	1715.0	1750	120.0	6.2	3.0		
	2800	OTTA	45 C	1809.2	1809.6	6.0	8.6	2.9		
	2695	SGMR	4 S/F	1809.3	1809.6	3.8	19			
	2695	PENT	27A RF	1930.0		220.0	4.8	4.0		
	2800	OTTA	24 R	1930.0	2000	30.0	4.8	2.4		
	2695	PENT	24P R	2000.0		145.0	4.8			
	2800	OTTA	3 S	2022.0	2022.6	3.0	10.4	3.5		
	2695	SGMR	4 S/F	2022.1	2022.5	3.0D	17			
	2695	PENT	1 S	2043.0	2044.5	4.0	2.4	1.0		

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS
NOVEMBER 1981

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	REMARKS
02	2695	PENT	1 S	2053.0	2054.6	5.0	5.2	2.0		
	2695	PENT	1 S	2126.0	2127.2	5.0	7.2	3.4		
	2695	PENT	21 GRF	2126.0	2136	50.0	5.6	3.0		
	2695	PENT	2 S/F	2147.0	2148.3	4.0	8.6	4.0		
	2695	PENT	1 S	2154.0	2155	3.0	7.2	2.4		
	2695	PENT	4 S/F	2158.5	2159.1	4.0	27.4	7.0		
	2695	PENT	1 S	2203.0	2203.9	2.0	7.2	3.6		
	2695	PENT	26 FAL	2225.0	2310	45.0	-4.8	-2.4		
	8800	LEAR	8 S	2347.3	2347.8	.7	11			
	2695	LEAR	8 S	2347.5	2347.8	.5	05			
03	8800	MANI	3 S	0409.5	0409.8	.5	41.2	13.7		
	2695	MANI	3 S	0409.5	0409.8	2.0	21.0	7.0		
	8800	LEAR	4 S/F	0834.0	0834.1	4.8	17			
	2800	OTTA	21 GRF	1357.0		90.0	7.6			
	3200	BERN	3 S	1412.7	1413.7	4.0	18.0			ONLY PAPER REC
	8800	ATHN	4 S/F	1453.6	1456.1	5.2	39			
	2695	ATHN	4 S/F	1453.8	1456.1	5.0D	45			
	8800	SGMR	47 GB	1459.6	1500.3	3.2D	15			
	2800	OTTA	1 S	1500.0	1502	1.0	7.0	3.5		
	2800	OTTA	8 S	1502.0	1502.1	.2	7.6			
	8800	SGMR	8 S	1551.3	1551.5	.3	27			
	2800	OTTA	240 R	1620.0	1640	20.0	3.6	1.8		
	2800	OTTA	24 R	1645.0	1655	10.0	5.0	2.5		
	2800	OTTA	27 RF	1645.0		115.0	5.0	4.2		
	2800	OTTA	24P R	1655.0		75.0	5.0			
	2800	OTTA	1 S	1804.2	1804.7	1.0	2.6	1.3		
	2800	OTTA	26 FAL	1810.0	1840	30.0	-5.0	-2.0		
	2695	PENT	4 S/F	2014.0	2014.5	3.0	11.0	3.6		
	2695	PENT	2 S/F	2130.0	2132	10.0	7.8	3.6		
04	8800	LEAR	8 S	0510.1	0510.3	.9	20			
	8800	LEAR	8 S	0513.3	0513.6	.7	62			
	2695	LEAR	8 S	0513.3	0513.6	1.0	36			
	2695	MANI	3 S	0513.5	0514.0	1.5	16.9	5.6		
	2695	LEAR	4 S/F	0618.0	0619.5	3.1	09			
	8400	BERN	21 GRF	0804.0	0824.2	26.0	20.0			
	3200	BERN	21 GRF	0804.0	0824.2	26.0	13.0			
	8400	BERN	4 S/F	0953.0	0953.5	2.0	22.0			
	3200	BERN	4 S/F	0953.0	0953.8	2.0	14.0			
	3200	BERN	4 S/F	1049.0	1050.2	11.0D	36.0			
	8400	BERN	4 S/F	1049.0	1050.2	11.0	128.0			
	2695	ATHN	4 S/F	1049.3	1050.3	4.7D	46			
	8800	SGMR	8 S	1605.3	1605.6	2.0D	26			
	2800	OTTA	3 S	1605.5	1605.8	1.5	19.8	6.6		
	2695	SGMR	8 S	1605.6	1605.8	.9	29			
	2800	OTTA	29 PBI	1607.0	1607	35.0	4.2	3.7		
	2800	OTTA	1 S	1736.0	1738.5	6.0	4.2	1.4		
	2695	SGMR	49 GB	1824.1	1828.6	15.9D	160			
	8800	SGMR	49 GB	1824.3	1828.3	13.7D	740			
	2800	OTTA	4 S/F	1824.5	1828.8	14.5	198.0	34.0		
	8800	PALE	47 GB	1827.1	1828.3	4.0	810			
	2695	PALE	4 S/F	1827.3	1828.6	4.0	180			
	8800	PALE	8 S	1836.3	1836.3	.7	30			
	2800	OTTA	29 PBI	1839.0	1839	20.0	5.0	3.0		
	2800	OTTA	20 GRF	1905.0	1950	80.0	9.6	3.6		
	8800	PALE	8 S	2130.8	2131.1	.3	20			
	8800	PALE	8 S	2236.6	2236.8	.2	16			
05	2695	MANI	3 S	0031.4	0032.0	.9	25.3	8.4		
	2695	MANI	3 S	0119.4	0120.2	1.6	42.1	14.0		
	2695	MANI	4 S/F	0211.5	0212.5	4.0	148.5	49.5		
	8800	MANI	4 S/F	0211.5	0212.5	3.2	217.2	72.4		
	8400	BERN	45 C	0731.0	0733.5	3.0	77.0			
	3200	BERN	3 S	0731.0	0732.0	2.0	34.0			
	8800	MANI	4 S/F	0732.0	0732.5	2.5	92.4	30.8		
	2695	MANI	4 S/F	0732.0	0732.6	2.0	79.2	26.4		
	8400	BERN	45 C	0831.5	0833.0	13.0	336.0			
	3200	BERN	45 C	0831.5	0833.2	13.0	166.0			
	8800	MANI	4 S/F	0833.1	0833.6	3.9	263.9	88.0		
	2695	MANI	4 S/F	0833.2	0834.0	5.3	208.6	69.5		
	3200	BERN	4 S/F	1237.2	1238.5	13.0	57.0			ONLY PAPER REC
	2800	OTTA	4 S/F	1238.3	1238.8	3.0	62.0	47.0		
	8800	ATHN	4 S/F	1238.3	1239.6	3.8	77			
	2695	ATHN	4 S/F	1238.5	1238.8	4.5D	81			
	8800	SGMR	4 S/F	1238.6	1239.6	2.5D	41			
	2695	SGMR	4 S/F	1238.6	1238.8	2.5D	81			
	2800	OTTA	21 GRF	1415.0	1425	45.0D	3.8			
	3200	BERN	3 S	1447.5	1448.0	2.0	90.0			ONLY PAPER REC
	8800	SGMR	8 S	1447.8	1448.3	1.5D	230			
	2800	OTTA	3 S	1448.0	1448.4	1.8	89.0	25.0		
	2695	SGMR	8 S	1448.0	1448.3	.5	70			
	2800	OTTA	8 S	1731.9	1732	.5	6.8			
	2800	OTTA	20 GRF	1825.0	1830	22.0	3.8	1.9		
	8800	LEAR	47 GB	2313.0	2314.8	8.3	23			

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS
NOVEMBER 1981

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	REMARKS
05	8800	PALE	47 GB	2314.5	2314.6	1.3	21			
06	8800	PALE	8 S	0001.1	0001.5	.5	97			
	2695	MANI	3 S	0001.3	0001.9	1.1	28.6	9.5		
	8800	LEAR	8 S	0001.3	0001.5	.3	76			
	2695	LEAR	8 S	0001.3	0001.5	.2	13			
	8800	MANI	3 S	0001.5	0002.0	.9	81.3	27.1		
	2800	OTTA	1 S	1316.0	1316.5	2.0	3.2	1.6		
	2800	OTTA	40 F	1545.8	1546.1	.6	9.4			
	2800	OTTA	20 GRF	1715.0	1735	75.0	5.4	2.4		
07	8800	LEAR	47 GB	0014.3	0015.3	4.8	200			
	8800	PALE	8 S	0014.6	0015.3	1.2	180			
	8800	MANI	3 S	0014.8	0016.0	2.2	171.5	57.2		
	2695	LEAR	47 GB	0015.3	0016.0	.8	17			
	2695	PALE	47 GB	0015.3	0015.3	3.2	22			
	2695	MANI	1 S	0015.5	0015.0	1.5	5.7	1.9		
	8800	LEAR	8 S	0302.1	0302.3	.7	29			
	2695	LEAR	8 S	0302.1	0302.3	1.7	16			
	8800	MANI	4 S/F	0354.5	0356.6	4.0	487.1	162.4		
	2695	LEAR	47 GB	0355.0E	0356.0	2.0	82			
	2695	MANI	4 S/F	0355.0	0356.7	3.0	85.5	28.5		
	8800	LEAR	47 GB	0355.0E	0356.0	2.8	460			
	2695	ATHN	4 S/F	0714.6	0724.1	19.5D	48			
	2695	LEAR	47 GB	0715.8	0718.6	13.5	27			
	2695	MANI	4 S/F	0716.0	0723.4	8.5	49.9	16.6		
	8800	ATHN	4 S/F	0718.3	0726.6	18.5	06			
	8800	LEAR	8 S	0810.8	0810.8	.2	24			
	2695	LEAR	8 S	0810.8	0811.3	.7	13			
	2800	OTTA	20 GRF	1328.0	1332	30.0	5.2	2.6		
	2800	OTTA	2 S/F	1556.0	1557	6.0	2.6	1.3		
	2800	OTTA	40 F	1823.3	1823.8	1.2	6.6			
	2695	SGMR	8 S	1824.0	1824.1	.6D	22			
	2695	LEAR	8 S	2303.0	2303.1	.1	13			
08	8800	MANI	3 S	0358.1	0358.8	2.9	121.2	40.4		
	2695	MANI	3 S	0358.4	0358.8	2.6	74.1	24.7		
	3200	BERN	4 S/F	1411.0	1411.5	2.0	45.0			ONLY PAPER REC
	2800	OTTA	20 GRF	1655.0	1710	125.0	9.8	5.0		
	2800	OTTA	21 GRF	1905.0	1920	160.0	18.0	8.6		
	2800	OTTA	1 S	1909.0	1910.3	2.8	7.2	3.6		
	2800	OTTA	3 S	1913.0	1913.5	1.2	12.2	6.1		
	2800	OTTA	3 S	1915.0	1916	3.0	10.2	5.1		
	2800	OTTA	1 S	1936.8	1937.2	2.2	4.8	2.2		
09	2695	MANI	3 S	0448.2	0449.1	1.8	11.7	3.9		
	8800	MANI	3 S	0448.2	0449.1	1.8	58.1	19.4		
	8800	MANI	4 S/F	0612.1	0614.8	5.4	87.2	29.1		
	2695	MANI	4 S/F	0613.5	0614.8	2.0	32.6	10.9		
	3200	BERN	4 S/F	0929.0	0929.5	1.0	30.0			ONLY PAPER REC
	3200	BERN	47 GB	1231.0	1313.0U	140.0	850.0D			ONLY PAPER REC
	2800	OTTA	47 GB	1303.0	1313	37.0	1450.0	504.0		
	2800	OTTA	29 PBI	1340.0	1340	150.0	70.0	18.0		
	2800	OTTA	45 C	1750.2	1750.6	1.5	8.2	3.0		
	2800	OTTA	260 FAL	1755.0	1930	95.0	-8.0	-4.0		
	2695	PENT	240 R	2008.0	2010	2.0	2.4	1.2		
	2800	OTTA	21 GRF	2015.0	2025	70.0	4.4	2.2		
	2800	OTTA	4 S/F	2059.0	2100.2	2.0	15.0	7.2		
10	8800	MANI	3 S	0545.7	0547.0	3.6	146.1	48.7		
	2695	MANI	3 S	0546.1	0547.0	2.9	23.7	7.9		
	2800	OTTA	240AR	1550.0	1650	60.0	11.4	5.7		
	2800	OTTA	4 S/F	1622.0	1622.5	2.0	21.8	8.0		
	2800	OTTA	22 GRF	1652.0	1700	12.0	5.4	2.7		
	2695	PENT	27F RF	1750.0		227.0	4.2	3.8		
	2695	PENT	24 R	1750.0	1755	5.0	4.2	3.0		
	2695	PENT	24P R	1755.0		200.0	4.2			
	2695	PENT	26 FAL	2115.0	2157	22.0	-4.2	-2.1		
	2695	PENT	21 GRF	2140.0	2200	40.0	4.2	2.1		
	2695	PENT	1 S	2143.0	2144	2.0	3.0	1.5		
11	2695	MANI	3 S	0445.7	0447.2	2.3	11.6	3.9		
	3200	BERN	42 SER	0850.5	0851.2	12.0	60.0			ONLY PAPER REC
	3200	BERN	4 S/F	1448.5	1449.1	2.0	36.0			ONLY PAPER REC
	2800	OTTA	45 C	1449.0	1449.5	2.0	30.0	13.0		
	2800	OTTA	3 S	1747.8	1748.2	1.2	45.0	20.0		
	2800	OTTA	29 PBI	1749.0	1749	10.0	6.0	2.0		
12	2695	MANI	3 S	0152.0	0153.8	4.0	92.1	30.7		
	3200	BERN	3 S	0810.0	0810.6	2.0	12.0			
	8400	BERN	3 S	0810.0	0810.5	1.0	84.0			
	3200	BERN	42 SER	0852.0	0953.8	64.0	131.0			
	3200	BERN	41 F	1236.0	1239.2	6.0	18.0			
	2800	OTTA	21 GRF	1400.0	1418	90.0	5.4			
	2800	OTTA	1 S	1452.8	1453.5	2.5	3.0	1.5		

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS
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DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	REMARKS
12	3200	BERN	4 S/F	1456.5	1458.5	3.0	32.0			
	8400	BERN	3 S	1458.0	1458.5	2.0	50.0			
	2800	OTTA	4 S/F	1458.0	1458.6	4.0	27.0	9.0		
	2800	OTTA	240 R	1545.0	1600	15.0	2.8	1.0		
	2800	OTTA	4 S/F	1600.2	1601.9	6.8	132.0	24.0		
	2800	OTTA	31A ABS	1607.0	1615	30.0	-7.2	-3.6		
	2800	OTTA	8 S	1609.8	1610	.5	3.2	1.6		
	2800	OTTA	1 S	1619.5	1620	1.0	3.6	1.8		
	2800	OTTA	4 S/F	1629.2	1630.2	3.0	11.2	3.8		
	2800	OTTA	20 GRF	1705.0	1720	35.0	6.8	3.4		
	2800	OTTA	23 GRF	1810.0	1825	85.0	9.8	4.9		
	2800	OTTA	46F C	1811.8	1812.9	8.0	144.0	24.0		
	2800	OTTA	8 S	1831.5	1831.7	.5	3.2	1.6		
	2800	OTTA	3 S	1836.8	1837	2.0	17.8	6.0		
	2800	OTTA	1 S	1847.1	1847.4	1.0	2.2	1.1		
	2800	OTTA	1 S	1859.8	1900	1.0	6.6	3.3		
	2800	OTTA	2 S/F	1918.0	1918.5	2.0	2.6			
	2800	OTTA	4 S/F	1921.5	1922.5	2.0	28.0	18.6		
	2800	OTTA	1 S	1931.2	1931.8	1.0	6.6	3.1		
	2800	OTTA	1 S	1940.0	1940.7	2.0	3.2			
	2800	OTTA	3 S	2040.5	2040.8	1.5	46.0	23.0		
	2800	OTTA	30 PBI	2042.0	2042	18.0	7.2	2.4		
	2800	OTTA	1 S	2046.5	2047.9	2.0	9.0	3.0		
	2695	PENT	1 S	2103.0	2104	2.0	2.6	1.3		
	2695	PENT	2 S/F	2126.0	2126.9	1.0	3.8			
	2695	PENT	2 S/F	2128.0	2128.5	1.2	9.0			
	2695	PENT	21 GRF	2145.0	2200	20.0	5.4			
	2695	PENT	8 S	2152.8	2152.9	.2	8.0			
	2695	PENT	3 S	2154.0	2155.8	2.0	30.0	8.0		
	2695	PENT	8 S	2248.0	2248	.2	6.4			
13	3200	BERN	3 S	0804.0	0806.5	5.0	22.0			ONLY PAPER REC
	3200	BERN	45 C	0853.0	0857.7	9.0	13.0			ONLY PAPER REC
	3200	BERN	4 S/F	1100.5	1102.2	7.0	68.0			ONLY PAPER REC
	3200	BERN	3 S	1128.0	1128.6	4.0	40.0			
	2800	OTTA	1 S	1352.0	1352.2	1.2	8.6	4.2		
	2800	OTTA		1416.0	1417.5	14.0D	7.6			
	2800	OTTA	1 S	1435.2	1436	2.0	7.6	3.4		
	2800	OTTA	2 S/F	1648.0	1648.1	1.3	8.6			
	2800	OTTA	40 F	1823.0	1830	10.0	10.4			
	8800	SGMR	8 S	2015.3	2015.6	.5	240			
	2695	LEAR	8 S	2315.8	2316.0	.3	18			
	8800	LEAR	8 S	2338.8	2339.1	1.8	24			
	8800	PALE	8 S	2338.8	2339.3	1.8	29			
	8800	PALE	8 S	2343.6	2344.0	1.0	110			
	8800	LEAR	8 S	2343.6	2344.0	1.0	100			
	2695	PALE	8 S	2343.8	2343.8	.3	23			
	2695	LEAR	8 S	2343.8	2344.0	.3	20			
	2695	LEAR	4 S/F	2355.5	2356.3	2.3	27			
	2695	PALE	8 S	2355.5	2356.3	1.1	27			
	8800	LEAR	4 S/F	2355.8	2356.5	2.8	47			
	8800	PALE	4 S/F	2355.8	2356.3	2.3	57			
14	8800	PALE	8 S	0039.3	0039.8	.7	26			
	8800	PALE	8 S	0309.1	0309.1	.2	13			
	8800	LEAR	47 GB	0534.8	0536.8	13.8	160			
	2695	LEAR	47 GB	0535.6	0536.8	10.9	73			
	8800	ATHN	47 GB	0536.3	0536.8	9.0	139			
	8800	LEAR	8 S	0720.1	0720.3	.9	20			
	8800	LEAR	4 S/F	0725.6	0725.8	2.5	19			
	3200	BERN	3 S	0802.0	0803.0	1.0	19.0			
	2695	LEAR	8 S	0802.1	0802.3	.2	18			
	3200	BERN	3 S	0820.5	0821.0	1.0	39.0			
	8400	BERN	1 S	0820.6	0821.0	1.0	49.0			
	2695	LEAR	8 S	0820.8	0821.0	.7	37			
	8800	ATHN	8 S	0820.8	0821.1	1.5	28			
	8800	LEAR	8 S	0820.8	0821.0	.7	48			
	8800	ATHN	8 S	1259.6	1300.1	1.7	28			
	2800	OTTA	21 GRF	1340.0	1415	150.0	9.4	4.7		
	2800	OTTA	1 S	1449.0	1501	4.0	4.2	2.1		
	2800	OTTA	2 S/F	1550.2	1550.5	2.0	3.8	2.7		
	2800	OTTA	240 R	1620.0	1700	40.0	3.8	1.9		
	2800	OTTA	21 GRF	1925.0	1929	14.0	4.6	2.3		
	8800	PALE	4 S/F	1926.8	1927.3	3.0	61			
	2800	OTTA	2 S/F	1927.1	1927.4	1.0	5.6			
	8800	SGMR	4 S/F	1927.1	1927.3	2.2	37			
	2800	OTTA	240AR	1957.0	2042	45.0	11.0	5.5		
	2800	OTTA	3 S	1957.0	1959.5	13.0	25.0	10.0		
	8800	SGMR	4 S/F	1958.1	2000.0	3.4	13			
	2695	PALE	4 S/F	1958.3	1959.5	6.7	31			
	2695	SGMR	4 S/F	1958.6	2000.0	2.7	28			
	8800	PALE	8 S	1958.8	1959.3	.7	20			
	8800	PALE	8 S	2025.1	2025.6	.2	27			
	2695	PENT	29 PBI	2130.0	2130	30.0D	25.0			
	8800	PALE	47 GB	2155.3	2155.8	13.7	34			

SOLAR RADIO EMISSION
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DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
14	2695	PALE	47 GB	2155.8	2157.8	13.2	18			
	2695	PENT	47 GB	2158.0	2206	32.0	1135.0	440.0		
	8800	LEAR	47 GB	2158.3	2200.8	6.8	170			
	2695	LEAR	47 GB	2158.6	2200.8	6.5	280			
	2695	MANI	40 F	2201.0D	2210.0D	28.0E	2829.3D	943.1D		
	8800	MANI	40 F	2201.0D	2213.1D	30.0E	1730.9D	577.0D		
	8800	PALE	4 S/F	2209.0	2209.1	27.1	880			
	2695	PALE	4 S/F	2209.0	2209.1	27.1	840			
	2695	LEAR	47 GB	2217.3	2205.5	12.8	980			
	8800	LEAR	47 GB	2217.3	2207.0	11.0	1000			
	8800	PALE	8 S	2236.3	2236.6	18.5	70			
	2695	PALE	8 S	2236.3	2236.8	18.5	16			
	8800	PALE	4 S/F	2254.8	2256.3	13.3	50			
15	3200	BERN	3 S	0747.5	0749.5	12.0	38.0			ONLY PAPER REC
	2695	MANI	3 S	0749.0	0750.0	2.5	36.0	12.0		
	8800	MANI	3 S	0749.0	0750.0	1.5	24.2	8.1		
	3200	BERN	3 S	1312.0	1316.0	8.0	14.0			ONLY PAPER REC
	2800	OTTA	4 S/F	1314.0	1316	6.0	10.6	6.0		
	3200	BERN	4 S/F	1420.5	1422.0	14.0	216.0			ONLY PAPER REC
	2800	OTTA	4 S/F	1421.0	1422.3	15.0	297.0	30.0		
	8800	ATHN	4 S/F	1421.1	1422.3	5.0	139			
	2800	OTTA	3 S	1530.0	1531	9.0	11.2	3.6		
	2800	OTTA	1 S	1637.2	1638	3.0	9.2	4.0		
	2695	PALE	8 S	1829.6	1829.8	1.9	24			
	8800	PALE	4 S/F	1829.6	1831.3	2.4	41			
	2800	OTTA	4 S/F	1829.7	1830	3.5	17.2	5.8		
	2800	OTTA	1 S	1852.0	1853.7	4.0	6.0	3.0		
	2695	PENT	3 S	2125.2	2126.1	2.8	10.6	5.0		
	8800	PALE	8 S	2125.6	2125.8	.7	40			
	2695	PALE	8 S	2125.8	2126.1	.2	13			
16	8800	ATHN	8 S	1219.8	1220.1	1.3	70			
	3200	BERN	4 S/F	1247.5	1247.8	6.0	38.0			ONLY PAPER REC
	2800	OTTA	4 S/F	1842.0	1843	2.5	11.8	4.0		
	2695	PENT	1 S	2010.0	2011	1.5	2.4	1.2		
	2695	PALE	8 S	2135.6	2135.8	1.0	27			
	8800	PALE	8 S	2135.6	2136.0	1.0	40			
17	3200	BERN	3 S	1151.5	1155.1	8.0	77.0			
	2695	PENT	46F C	2149.0	2149.3	3.0	21.4	5.8		
	2695	PENT	2 S/F	2158.3	2158.5	1.7	3.4			
	2695	PENT	1 S	2212.0	2214	4.0	2.4	1.2		
	2695	PENT	3 S	2312.2	2312.7	1.8	14.8	7.0		
18	2695	PALE	8 S	0110.8	0111.1	.3	17			
	2695	LEAR	47 GB	0111.0	0111.1	.1	13			
	8800	PALE	8 S	0111.1	0111.1	.2	24			
	8800	LEAR	47 GB	0111.1	0111.1		19			
	8800	LEAR	47 GB	0122.8	0123.1	2.8	30			
	2695	LEAR	47 GB	0122.8	0125.0	5.8	170			
	2695	PALE	4 S/F	0122.8	0124.8	2.8	200			
	8800	PALE	4 S/F	0122.8	0123.1	7.3	40			
	2695	LEAR	8 S	0147.1	0147.6	.7	11			
	2695	MANI	4 S/F	0304.0	0307.5	7.5	19.4	6.5		
	2695	LEAR	47 GB	0304.8	0305.0	6.5	16			
	8800	LEAR	47 GB	0304.8	0305.0	7.0	21			
	8800	LEAR	4 S/F	0412.6	0414.6	5.8	210			
	8800	MANI	4 S/F	0413.0	0415.0	4.5	221.9	74.0		
	2695	LEAR	4 S/F	0413.1	0414.6	3.9	100			
	2695	MANI	4 S/F	0413.2	0415.0	4.3	106.9	35.6		
	2695	LEAR	4 S/F	0420.8	0422.6	2.5	37			
	2695	MANI	4 S/F	0600.5	0603.2	5.0	19.4	6.5		
	2695	LEAR	4 S/F	0600.6	0603.0	5.2	19			
	8800	LEAR	4 S/F	0601.8	0603.0	6.3	13			
	8800	MANI	3 S	0602.0	0603.3	3.0	22.2	7.4		
	2800	OTTA	21 GRF	1416.0		120.0D	9.6			
	2800	OTTA	1 S	1431.0	1432	5.0	2.8	1.6		
	2695	SGMR	4 S/F	1512.6	1513.1	2.5	18			
	8800	SGMR	4 S/F	1512.8	1513.1	3.2	34			
	2800	OTTA	3 S	1512.9	1513.3	2.0	10.0	5.0		
	2800	OTTA	21 GRF	1630.0	1650	90.0	3.6	2.6		
	2800	OTTA	2 S/F	1643.5	1644.3	1.5	3.6			
	2800	OTTA	2 S/F	1707.0	1707.7	2.0	5.2			
	2695	LEAR	8 S	2329.8	2330.6	1.3	22			
19	8800	LEAR	4 S/F	0226.6	0230.0	7.4	19			
	2695	LEAR	4 S/F	0226.6	0229.6	7.4	13			
	2695	PALE	8 S	0228.8	0230.1	1.5	20			
	8800	PALE	8 S	0229.5	0231.6	.1	13			
	2800	OTTA	250 FAL	1600.0	1640	40.0	-3.4			
	2800	OTTA	20 GRF	1725.0	1805	110.0	3.8	1.9		
20	2800	OTTA	4 S/F	1528.0	1529.5	3.2	46.0	9.8		
	8800	SGMR	4 S/F	1528.6	1529.3	2.5	52			

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DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
20	2695	SGMR	8 S	1529.0	1529.3	.6	46			
	2800	OTTA	1 S	2038.0	2038.4	1.7	7.4	3.0		
21	2695	LEAR	8 S	0349.1	0349.1	.2	05			
	8800	LEAR	8 S	0426.6	0426.6	1.0	16			
	2695	LEAR	8 S	0426.6	0426.6	.7	04			
	2800	OTTA	40 F	1554.0	1556.3	9.0	21.0			
	2800	OTTA	23 GRF	1554.0	1605	50.0	2.4	1.2		
	2695	SGMR	8 S	1555.6	1555.8	.4	24			
	8800	SGMR	8 S	1555.6	1556.3	1.2	20			
22	8800	LEAR	47 GB	0240.8	0243.1	2.7	13			
	2695	LEAR	47 GB	0240.8	0243.3	5.2	20			
	2695	MANI	4 S/F	0241.3	0246.0	5.7	46.2	15.4		
	2695	MANI	3 S	0322.8	0323.4	4.7	137.2	45.7		
	8800	MANI	3 S	0323.0	0323.2	2.0	212.0	70.7		
	2695	ATHN	47 GB	0655.6	0706.6	59.0D	200			
	2695	MANI	4 S/F	0656.0	0707.6	56.0	140.0	46.7		
	8800	LEAR	47 GB	0656.1	0657.3	12.9	430			
	2695	LEAR	47 GB	0656.1	0656.8	12.9	119			
	8800	MANI	4 S/F	0656.2	0657.8	16.8	318.0	106.0		
	8800	ATHN	4 S/F	0657.3	0749.8	52.5D	200			
	8800	LEAR	4 S/F	0709.0		10.3	430			
	2695	LEAR	47 GB	0709.0	0714.6	10.3	59			
	8800	LEAR	4 S/F	0719.3		11.0	430			
	2695	LEAR	47 GB	0719.3	0721.3	11.0	50			
	2695	LEAR	4 S/F	0730.3		19.3	160			
	2800	OTTA	26A FAL	1400.0	1501	61.0	-0.2	-4.1		
	2800	OTTA	40 F	1458.0	1459.2	2.0	3.0			
	2800	OTTA	21 GRF	1536.0	1544	40.0	2.4	1.2		
	2800	OTTA	1 S	1537.2	1537.9	1.2	4.6	2.3		
	2695	SGMR	8 S	1537.3	1537.8	1.5	15			
	8800	SGMR	8 S	1537.6	1537.8	.5	30			
	2800	OTTA	2 S/F	1743.0	1744	4.0	3.0	1.2		
23	2695	SGMR	43 NS	1529.8	1530.5	42.0	39			
	2695	LEAR	8 S	0624.5	0624.8	1.1	11			
	2695	ATHN	4 S/F	1308.3	1310.3	3.7	19			
	2800	OTTA	46F C	1308.6	1310	3.0	16.2	6.2		
	2800	OTTA	3 S	1529.5	1530.5	2.0D	21.0			
	2695	PENT	240 R	2125.0	2150	25.0	4.4	2.2		
	2695	PENT	1 S	2212.0	2212.5	1.0	3.6	1.8		
24	2800	OTTA	240 R	1505.0	1520	15.0	3.8	2.4		
	2800	OTTA	20 GRF	2035.0	2055	55.0	2.8	1.6		
25	8800	LEAR	4 S/F	0146.6	0148.3	2.2	11			
	8800	LEAR	4 S/F	0302.3	0303.8	2.2	23			
	2695	MANI	4 S/F	0517.0	0521.0	6.5	25.2	8.4		
	2695	LEAR	47 GB	0519.1	0521.6	7.0	27			
	8800	LEAR	47 GB	0520.3	0521.8	7.3	21			
	2695	LEAR	4 S/F	0828.0	0832.8	7.0	11			
	2800	OTTA	1 S	1456.0	1456.8	3.0	4.2	1.4		
	2800	OTTA	1 S	1719.0	1719.8	3.0	5.2	1.6		
	2800	OTTA	4 S/F	1815.5	1817.0	5.0	26.0	7.0		
	2695	SGMR	8 S	1816.6	1817.8	1.5	34			
	8800	SGMR	8 S	1816.6	1817.8	2.0	56			
	2800	OTTA	240 R	1835.0	1920	45.0	3.4	1.8		
	2695	PENT	20 GRF	2050.0	2105	45.0	3.0	2.2		
	8800	LEAR	4 S/F	2319.8	2325.0	7.3	13			
	2695	LEAR	47 GB	2320.1	2320.3	2.7	16			
26	2695	LEAR	8 S	0931.1	0931.6	1.9	40			
	8800	LEAR	8 S	0931.3	0931.6	.7	20			
	8800	ATHN	8 S	1107.1	1107.5	1.5	130			
	8800	ATHN	4 S/F	1232.5	1233.3	7.3	91			
	2800	OTTA	1 S	1426.5	1427.5	3.5	3.2	1.8		
	2800	OTTA	46F C	1613.0	1618.4	16.0	47.0	22.8		
	8800	SGMR	47 GB	1617.0	1618.6	33.1	37			
	2695	SGMR	47 GB	1617.0	1618.6	8.8	40			
	2800	OTTA	29 PBI	1629.0	1629	55.0	9.4	4.4		
	2800	OTTA	3 S	1759.5	1800.4	2.5	10.4	3.4		
	2800	OTTA	31 ABS	1802.0	1810	28.0	-2.2	-1.1		
	2800	OTTA	4 S/F	1934.0	1938	6.0	19.0	8.0		
	2695	SGMR	8 S	1937.1	1938.0	1.0	21			
	8800	SGMR	8 S	1937.6	1938.8	.2	16			
	2800	OTTA	29 PBI	1940.0	1940	20.0	6.4	3.2		
	2695	PENT	20 GRF	2005.0	2022	30.0	3.6	1.8		
	2695	PENT	21 GRF	2040.0	2052	30.0	3.0	1.5		
	2695	PENT	8 S	2053.7	2053.8	.3	5.8	2.9		
	8800	LEAR	8 S	2325.1	2325.6	1.0	11			
27	3200	BERN	3 S	0931.0	0931.5	3.0	37.0			ONLY PAPER REC
	2800	OTTA	20 GRF	1350.0	1415	160.0	4.6	2.3		
	2800	OTTA	4 S/F	1722.0	1723	3.0	16.8	5.0		

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SELECTED FIXED FREQUENCY EVENTS

NOVEMBER 1981

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	REMARKS
27	2800	OTTA	20 GRF	1800.0	1840	70.0	2.6	1.4		
	2800	OTTA	20 GRF	1950.0	2000	30.0	2.4	1.8		
28	8800	LEAR	8 S	0630.0	0630.3	.5	19			
	8800	LEAR	4 S/F	0731.3	0731.6	3.0	22			
	3200	BERN	4 S/F	0945.0	0947.1	2.0	180.0			ONLY PAPER REC
	2695	LEAR	4 S/F	0945.1	0946.6	3.0	180			
	8800	LEAR	4 S/F	0945.5	0946.0	2.6	54			
	2800	OTTA	240 R	1504.0	1507	3.0	3.0	1.2		
	2800	OTTA	20 GRF	1600.0	1740	180.0	6.6	3.3		
29	8800	ATHN	8 S	0918.8	0919.0	.7	65			
	2695	ATHN	4 S/F	0918.8	0919.3	9.0	290			
	2695	LEAR	4 S/F	0919.1	0919.6	5.5	310			
	8800	LEAR	4 S/F	0919.3	0919.6	4.5	190			
	2800	OTTA	20 GRF	1500.0	1507	25.0	3.0	2.0		
	2800	OTTA	21 GRF	1540.0	1655	220.0	33.0	14.8		
	2800	OTTA	40 F	1543.0	1623.1	92.0	66.0			
	2800	OTTA	8 S	1846.7	1847	.9	5.8	2.9		
	2800	OTTA	45 C	1928.7	1929.5	11.0	61.0	12.2		
	2695	PALE	4 S/F	1928.8	1929.3	3.8	62			
	2800	OTTA	20 GRF	1950.0	2005	60.0	3.4	1.7		
30	2695	LEAR	4 S/F	0202.0	0205.6	6.8	29			
	8800	LEAR	4 S/F	0204.6	0205.3	4.2	48			
	8800	PALE	8 S	0205.1	0205.3	.5	42			
	2695	PALE	8 S	0205.3	0205.5	.3	21			
	2800	OTTA	240AR	1455.0	1535	40.0	7.0	2.4		
	2800	OTTA	3 S	1456.0	1457.2	5.0	108.0	24.0		
	8800	LEAR	4 S/F	2315.1	2315.1	2.2	18			

Observatories:

BERN = Berne MANI = Manila OTTA = Ottawa ARO PENT = Penticton SGMR = Sagamore Hill
LEAR = Learmonth ATHN = Athens PALE = Palehua

Explanation of Type Code:

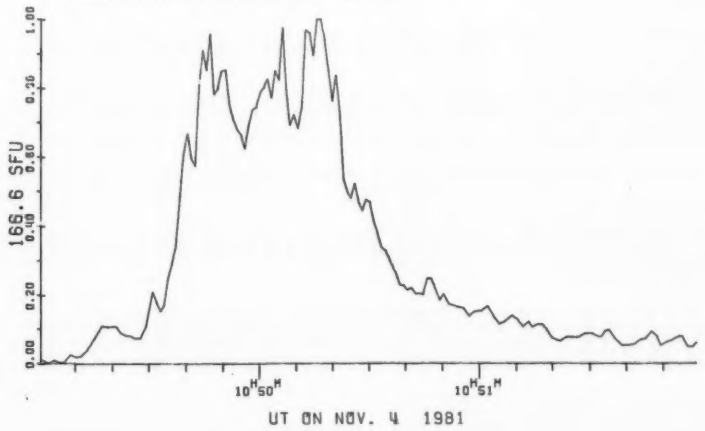
1 Simple 1
2 Simple 1F
3 Simple 2
4 Simple 2F
5 Simple
6 Minor
7 Minor +
8 Spike
20 Simple 3
21 Simple 3A
22 Simple 3F
23 Simple 3AF
24 Rise
25 Rise A
26 Fall
27 Rise and Fall
28 Precursor
29 Post Burst Increase
30 Post Burst Increase A
31 Post Burst Decrease
32 Absorption
40 Fluctuation
41 Group of Bursts
42 Series of Bursts
43 Onset of Noise Storm
44 Noise Storm in Progress
45 Complex
46 Complex F
47 Great Burst
48 Major
49 Major +

SELECTED SOLAR NOISE BURSTS

NOVEMBER 4-14, 1981

INSTITUTE OF APPLIED PHYSICS, UNIVERSITY OF BERNE, SWITZERLAND

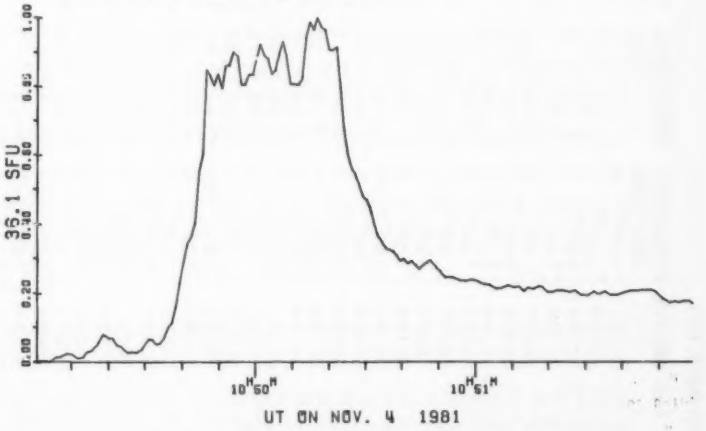
I19.6, F=19.6 GHZ, BW=600.0 MHZ, T=1.0 SEC



UT ON NOV. 4 1981

INSTITUTE OF APPLIED PHYSICS, UNIVERSITY OF BERNE, SWITZERLAND

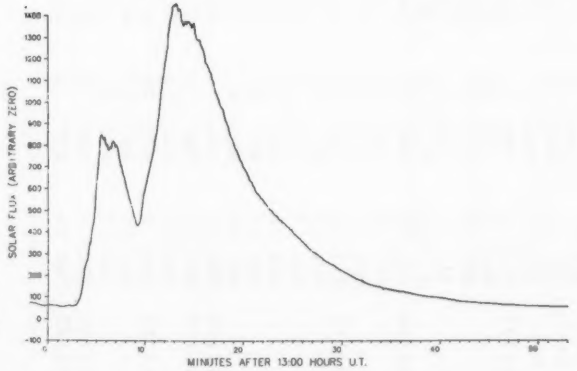
I 3.2, F=3.2 GHZ, BW=300.0 MHZ, T=1.0 SEC



UT ON NOV. 4 1981

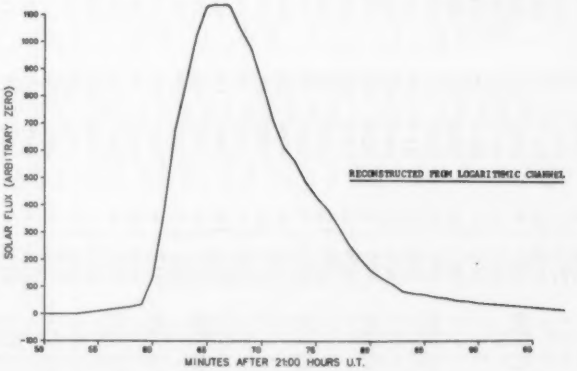
NOVEMBER 9, 1981

SELECTED 2800 MHz SOLAR NOISE BURST
A.R.O. OTTAWA, ONT.
CANADA



NOVEMBER 14, 1981

SELECTED 2700 MHz SOLAR NOISE BURST
D.R.A.O. PENTICTON, B.C.
CANADA



SOLAR WIND

Interplanetary Scintillations

NOVEMBER 1981

DATE	DOY	UT HR	VMID KM/S	ERR	VPK KM/S	ERR	RATING 1-4	SOURCE	ELONG DEG	LAT DEG	DIST AU	DLON DEG	LAG DAY	ROTATION NUMBER
811101	305	12	321	44	327	97	2	3C161	117	-4	1.17	11	1.78	1714.46
811102	306	5	275	*	354	*	2	3C459	131	7	1.22	-10	0.66	1714.49
	306	8	360	*	408	*	2	3C144-	136	3	1.23	10	1.95	1714.51
	306	11	351	*	422	*	2	3C144	136	3	1.23	9	1.90	1714.51
	306	16	267	*	263	*	2	3C237	69	0	0.93	21	1.06	1714.49
811103	307	5	353	10	332	63	2	3C459	130	7	1.21	-10	0.34	1714.60
	307	11	590	23	567	105	2	3C144	137	3	1.24	10	1.47	1714.64
	307	17	259	35	281	42	2	3C273	34	5	0.56	57	1.15	1714.52
	307	21	358	28	409	174	2	3C298	22	51	0.37	60	1.24	1714.59
811104	308	4	338	21	325	15	2	3C459	129	7	1.21	-11	0.33	1714.62
	308	10	314	59	377	65	2	3C144	138	3	1.24	10	2.10	1714.55
	308	12	248	63	223	16	2	3C161	120	-4	1.18	10	2.04	1714.50
811105	309	5	338	32	332	49	2	3C459	128	7	1.21	-10	0.33	1714.66
	309	10	555	22	645	28	2	3C144	139	3	1.24	9	1.42	1714.70
	309	12	320	72	322	13	2	3C161	120	-4	1.18	10	1.76	1714.61
811106	310	8	325	44	377	34	2	3C144-	140	2	1.24	9	2.08	1714.63
	310	12	434	34	428	23	2	3C161	121	-4	1.18	10	1.47	1714.71
	310	15	352	61	331	79	2	3C237	73	1	0.96	18	1.08	1714.69
	310	17	378	14	345	12	3	3C273	37	5	0.60	54	2.12	1714.67
	310	18	389	19	403	20	3	3C283	24	-36	0.41	57	1.43	1714.70
811107	311	12	381	40	394	74	2	3C161	122	-5	1.19	10	1.63	1714.72
	311	17	307	39	303	20	2	3C273	38	4	0.62	53	1.67	1714.68
811108	312	4	416	48	405	16	3	3C459	125	7	1.20	-10	0.07	1714.82
	312	12	402	9	395	38	3	3C161	123	-5	1.19	10	1.58	1714.77
811109	313	4	347	52	357	117	2	3C459	124	7	1.19	-11	0.17	1714.82
	313	11	438	40	438	61	2	3C161	124	-5	1.19	10	1.51	1714.82
	313	17	472	33	441	95	2	3C273	40	4	0.64	50	2.35	1714.81
811110	314	4	423	134	312	81	2	3C459	123	7	1.19	-12	-0.08	1714.90
	314	11	495	65	422	13	2	3C161	125	-5	1.20	9	1.39	1714.88
811111	315	4	288	19	317	49	2	3C459	122	7	1.19	-12	0.28	1714.85
	315	11	431	48	410	72	3	3C161	125	-5	1.20	9	1.52	1714.89
	315	12	380	74	353	81	2	3C196	112	9	1.15	13	1.69	1714.86
	315	13	286	16	326	80	2	3C216	101	8	1.10	15	1.75	1714.80
811112	316	4	614	23	629	23	2	3C459	121	7	1.18	-12	-0.38	1715.03
	316	11	521	67	424	68	2	3C161	126	-5	1.20	9	1.35	1714.96
	316	14	386	40	465	60	2	3C222	85	-2	1.02	17	1.32	1714.92
811113	317	4	530	50	566	21	2	3C459	120	6	1.18	-11	-0.25	1715.05
	317	11	366	21	389	45	2	3C161	127	-5	1.20	10	1.73	1714.93
	317	17	424	40	424	15	2	3C283	30	-28	0.50	55	1.90	1714.96
	317	20	443	147	448	25	2	3C298	28	34	0.47	58	2.16	1714.96
811115	319	11	586	21	606	26	2	3C161	129	-5	1.21	9	1.29	1715.09
	319	15	370	88	372	66	2	3C237	82	0	1.00	18	1.34	1715.02
	319	16	400	21	409	27	3	3C273	46	3	0.72	44	2.02	1715.01
	319	17	343	14	342	26	2	3C283	31	-27	0.52	54	1.39	1715.01
	319	20	413	63	308	105	2	3C298	30	31	0.50	57	2.01	1715.03
811116	320	11	343	43	340	62	2	3C161	129	-5	1.21	9	1.77	1715.02
	320	15	326	71	359	28	2	3C237	83	-1	1.01	18	1.34	1715.03
	320	17	478	49	450	14	2	3C283	32	-26	0.53	52	2.09	1715.08
811117	321	12	726	30	615	131	2	3C196	117	8	1.17	13	1.38	1715.18
	321	13	477	21	514	24	2	3C216	107	7	1.12	15	1.55	1715.13
	321	15	549	13	560	17	3	3C237	84	-1	1.01	17	1.31	1715.16
	321	16	447	40	457	21	2	3C273	48	2	0.74	43	2.13	1715.10
	321	17	421	50	361	14	2	3C283	33	-25	0.54	53	1.94	1715.10
	321	20	625	41	513	81	2	3C298	32	28	0.53	56	2.78	1715.13
811118	322	15	396	*	449	*	2	3C237	85	-1	1.02	17	1.36	1715.14
811119	323	16	341	*	372	*	2	3C273	50	2	0.77	40	1.74	1715.14
	323	17	432	114	416	74	2	3C283	35	-24	0.57	51	1.98	1715.18
811120	324	3	470	25	452	21	2	3C459	113	6	1.15	-13	-0.40	1715.29
	324	16	490	24	454	16	2	3C273	51	2	0.78	40	2.11	1715.22
	324	17	437	20	391	18	2	3C283	36	-23	0.59	49	1.95	1715.21
811121	325	4	408	*	404	*	2	3C459	112	6	1.15	-13	-0.32	1715.30
811122	326	16	295	33	296	60	2	3C273	53	1	0.80	38	1.57	1715.23

SOLAR WIND

Interplanetary Scintillations

NOVEMBER 1981

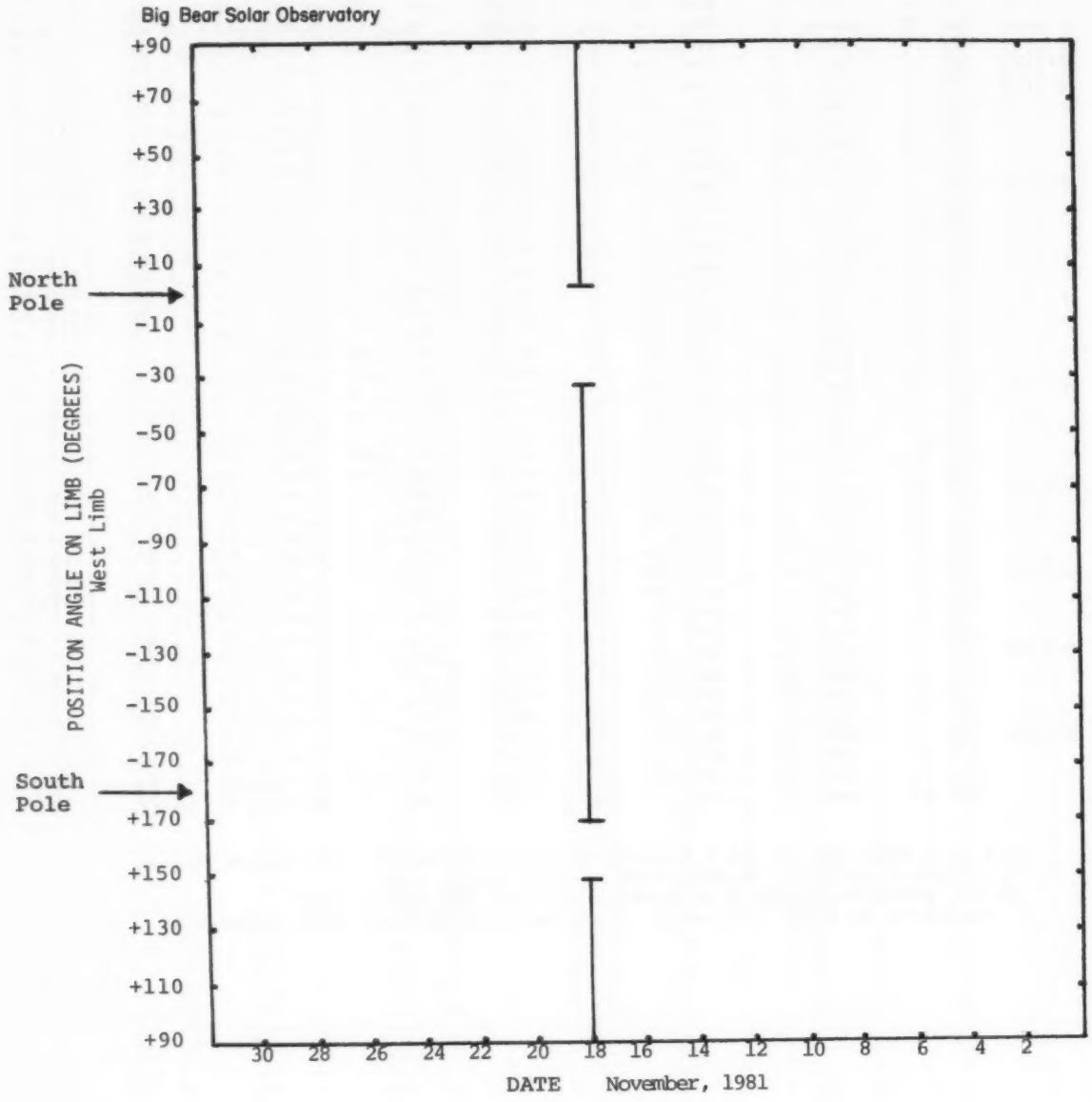
DATE	DOY	UT HR	VMID KM/S	ERR	VPK KM/S	ERR	RATING 1-4	SOURCE	ELONG DEG	LAT DEG	DIST AU	DLON DEG	LAG DAY	ROTATION NUMBER
	326	17	409	*	358	*	2	3C283	38	-22	0.62	48	1.81	1715.28
	326	18	316	*	286	*	2	3C295	76	16	0.97	11	0.63	1715.28
	326	19	366	15	290	8	2	3C298	36	23	0.59	52	1.81	1715.27
811123	327	16	367	32	294	46	2	3C273	54	1	0.81	36	1.75	1715.30
811124	328	3	256	16	256	10	2	3C459	109	6	1.13	-13	-0.07	1715.30
	328	16	468	19	491	20	3	3C273	55	1	0.82	36	1.93	1715.37
	328	17	382	11	379	11	3	3C283	40	-21	0.64	46	1.72	1715.35
	328	18	384	27	332	11	2	3C295	77	16	0.98	11	0.69	1715.39
	328	19	343	8	343	8	3	3C298	37	21	0.60	51	1.70	1715.33
811125	329	1	379	32	351	23	2	3C409	75	15	0.97	-11	-1.05	1715.46
	329	3	346	9	335	9	2	3C459	108	5	1.13	-14	-0.38	1715.42
	329	10	536	7	518	7	3	3C161	136	-6	1.23	7	1.30	1715.44
	329	11	448	37	449	73	2	3C196	124	7	1.19	12	1.68	1715.40
	329	13	494	22	488	13	3	3C216	114	6	1.16	13	1.54	1715.42
	329	13	545	20	537	15	2	3C222	98	-3	1.08	16	1.43	1715.44
	329	14	475	14	457	29	3	3C237	92	-2	1.05	16	1.39	1715.42
	329	16	407	16	333	23	2	3C273	56	1	0.83	34	1.79	1715.39
	329	17	390	12	428	27	2	3C283	41	-20	0.66	45	1.74	1715.39
	329	19	538	12	491	11	3	3C298	38	21	0.62	50	2.45	1715.41
811126	330	3	591	36	667	88	2	3C459	107	5	1.12	-14	-0.72	1715.55
	330	10	482	39	372	57	2	3C161	137	-6	1.24	6	1.37	1715.46
	330	16	452	14	436	14	2	3C273	57	1	0.84	34	1.87	1715.44
	330	16	393	12	387	33	3	3C283	41	-20	0.66	46	1.78	1715.42
	330	19	411	12	403	13	3	3C298	39	20	0.63	49	1.99	1715.42
811127	331	14	364	76	350	99	2	3C237	94	-2	1.06	17	1.56	1715.45
	331	15	433	14	429	21	3	3C273	58	1	0.85	32	1.76	1715.47
	331	16	367	10	359	9	3	3C283	42	-19	0.67	45	1.67	1715.45
	331	19	382	10	351	26	2	3C298	40	19	0.64	48	1.87	1715.45
811128	332	14	473	37	392	32	2	3C237	95	-2	1.07	17	1.52	1715.53
	332	15	339	11	318	29	2	3C273	59	1	0.86	30	1.48	1715.47
	332	16	369	11	369	11	3	3C283	43	-19	0.68	44	1.70	1715.49
	332	19	368	13	359	11	3	3C298	41	18	0.66	48	1.84	1715.49
811129	333	3	357	16	323	25	2	3C459	104	5	1.11	-14	-0.51	1715.58
	333	16	326	54	328	90	2	3C273	60	0	0.87	30	1.49	1715.51
	333	16	364	12	374	12	3	3C283	44	-18	0.69	43	1.63	1715.52
	333	18	386	11	382	15	3	3C298	41	17	0.66	47	1.85	1715.53
811130	334	3	222	15	221	34	2	3C459	103	5	1.11	-14	-0.20	1715.49
	334	15	329	15	307	14	2	3C273	61	0	0.87	30	1.54	1715.54
	334	16	336	15	339	21	2	3C283	45	-18	0.71	42	1.51	1715.55
	334	19	364	10	364	10	2	3C298	42	17	0.67	46	1.78	1715.56

VMID IS A MEAN AND VPK IS A MAXIMUM VELOCITY IN THE IPS SCATTERING REGION.
THE REGION'S CENTROID IS SPECIFIED BY LAT, DIST, DLON.
LAG AND ROTATION NUMBER GIVE MAPPING TO EARTH AND SUN AT VMID.
* INDICATES NO ERROR AVAILABLE, SINCE ONLY TWO ANTENNAS WERE OPERATING.

CORONAL HOLES

Helium D3 Chromosphere at Solar Limb

NOVEMBER 1981



PIONEER XII

NOVEMBER 1981

DATE Nov '81	TIME (UT)	ESV (°)	U_{H+} (km/s)	N_{H+} (H^+/cc)	T_{H+} (x10^6 K)
1	0615	048.	316.	17.3	0.036
2	0606		301.	22.	.056
3	0406		298.	27.4	.027
4	0644		505.	5.2	.058
5	0919		360.	49.9	.119
6	0554		385.	23.1	.086
7	0607		430.	30.	.182
8	0623		399.	24.5	.016
9	0605		399.	2.	.02
10	0648		623.	44.3	.078
11	0533		719.	14.1	.009
12	0538		591.	8.1	.364
13	0617		438.	7.6	.099
14	0601		546.	12.	.162
15	0601	040.	441.	3.8	.123
16	0521		395.	7.8	.164
17	0448		433.	7.1	.113
18	0443		383.	11.8	.164
19	0619		301.	65.4	.027
20	0718		416.	32.1	.137
21	0830		415.	19.8	.163
22	0518		439.	11.8	.126
23	0349		362.	14.5	.078
24	0259		324.	25.8	.037
25	0455		375.	26.7	.12
26	0736		311.	18.1	.048
27	0415		301.	24.9	.05
28	0641		313.	31.4	.065
29	0839		379.	13.6	.096
30	0332		334.	21.3	.045

INFERRED IP MAGNETIC FIELD

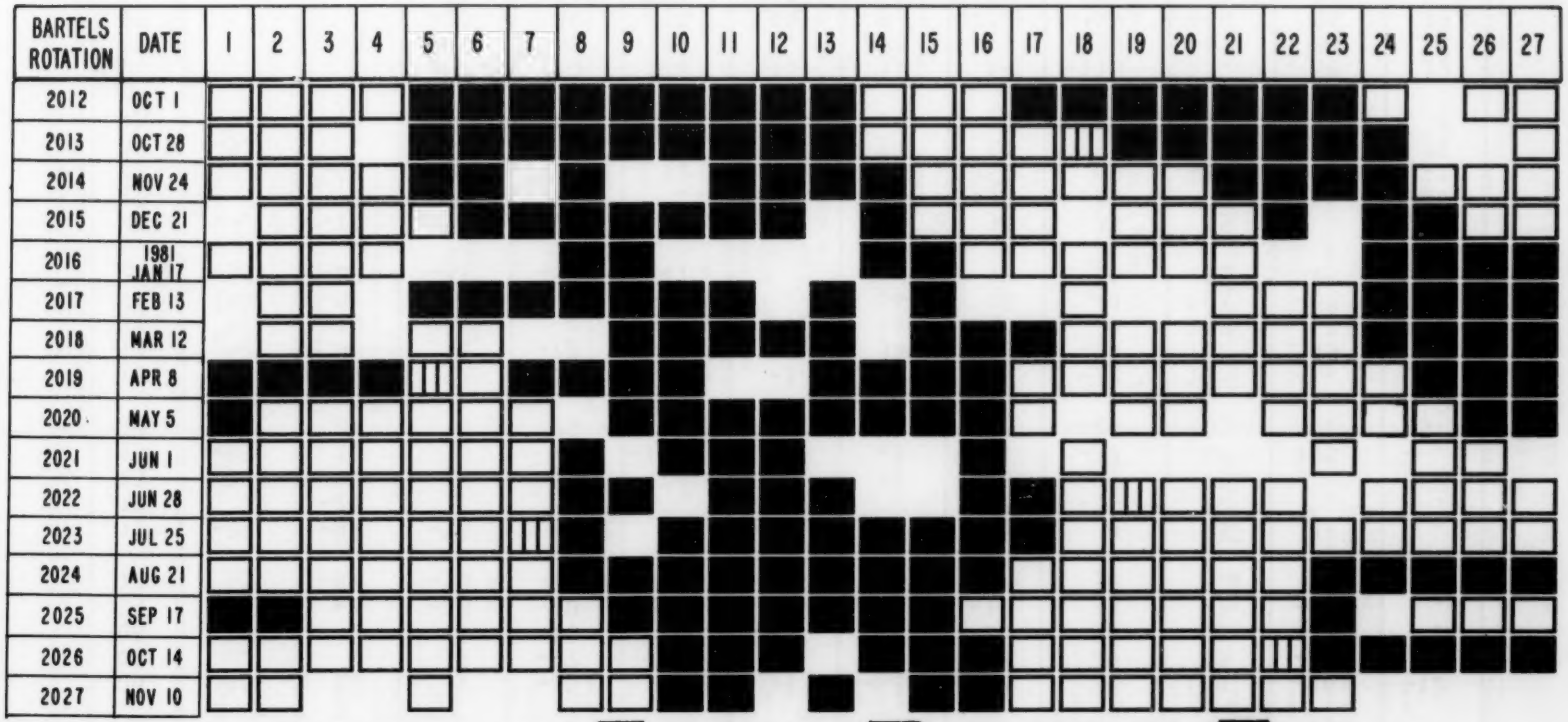
BARTELS ROTATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
2007	MAY 24			AT		AT		*	*	-	-	-	-	TA		AT			*	TA		-	TA		TA		-	TA
2008	JUN 20		-				AT			-	-				-	-								TA		TA		TA	
2009	JUL 17		-	AT		-						-			TA	TA	-	AT	AT		-		-	-	-	-	A*	-	-
2010	AUG 13		AT					-	AT	-						-		-	AT				TA			-	A*		
2011	SEP 9							TA		AT					TA	TA										TA			
2012	OCT 6							*			TA	TA		AT	A*							TA			TA			
2013	NOV 2	AT					TA	TA					AT	A*								-	TA	-	AT		TA		
2014	NOV 29				-						-	-			TA		TA	TA		AT			AT			-		TA	
2015	DEC 26										-	-			-	TA	-	TA	-	-	-	-	-	-	AT	AT	-	-	-
2016	1981 JAN 22	TA	-			AT	T*			-	AT	TA			TA						-				AT			TA	
2017	FEB 18				AT		TA							TA	TA		*							AT		TA		TA	
2018	MAR 17							AT						-					TA				AT		-	-		TA	AT
2019	APR 13	TA		-		-					-				TA				*	AT	-		-			-	AT	-	-
2020	MAY 10	-	-	-	-	TA	AT	TA		-				TA								*	*						
2021	JUN 6			*							AT				TA			AT			-	-	-	-		-		-	
2022	JUL 3		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2023	JUL 30		-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	TA	-	TA	-	-	-	-	AT	-	-	-
2024	AUG 26	-	-	-	-	TA	-	TA	-	-	TA	-	-	-	-	TA	-	TA	-	-	-	-	TA	-	-	-	-	-	-
2025	SEP 22		-	-	-	-	-	-	AT	-	TA	-	-	TA	-	TA	-	TA	-	AT	-	TA	AT	-	TA	-	TA	-	TA	-
2026	OCT 19	AT	-	TA	-	TA	-	-	TA	-	TA	-	-	TA	-	-	TA	-	-	-	-	-	AT	-	TA	-	-	-	-
2027	NOV 15		-	-	-	-	AT	-	AT	-	-	AT	-	-	-	-	TA	-											

▒ = definitely towards the sun □ = definitely away from the sun

T = towards the sun A = away from the sun * = effect doubtful or not discernible - = missing data

The table shows daily inferences of the polarity of the interplanetary magnetic field. The first half of the day is based principally on magnetograms produced by the magnetometer at the Vostok Antarctic Station of the USSR. The magnetometer of the U.S. Air Weather Service now operated at Thule by the Danish Meteorological Institute is used for the second half of the day. The Thule magnetometer ceased operating in August 1981.

STANFORD MEAN SOLAR MAGNETIC FIELD



POLARITY OF THE MEAN SOLAR MAGNETIC FIELD: □ = FIELD >2μT, ▥ = -2μT ≤FIELD ≤2μT, ■ = FIELD <-2μT

No box visible indicates no data available for that day.

NOTE: Data are taken daily at 2000 UT. Dates given are not Bartels Rotation dates. These earlier dates correspond to the occurrence of phenomena on the Sun that affect the Earth during the given Bartels Rotation.

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

1981

DAY	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
01	-111	33	.	75	2	16	53	-49	-134	-27	94	41
02	.	20	54	82	-51	21	49	.	-87	11	82	34
03	-33	64	.	31	-66	17	41	-72	-56	70	55	49
04	7	72	.	-23	-56	6	14	-80	-21	104	-1	-3
05	46	58	102	-67	-24	28	-17	-67	-7	115	-19	.
06	66	28	81	-85	23	33	-62	-48	11	104	-36	-12
07	.	.	39	-97	25	3	.	-33	26	28	-29	.
08	116	.	-11	-76	36	-27	-93	-26	30	25	-23	.
09	49	-6	-28	-40	45	.	-56	-19	33	-7	-16	.
10	13	-24	-50	-28	49	-96	-43	-7	32	.	11	.
11	-29	-42	-58	-7	35	-75	.	16	4	8	34	.
12	.	-26	.	0	.	-58	.	58	-29	32	.	.
13	-39	.	18	13	-76	.	-9	68	-47	43	.	.
14	-13	15	35	-6	-147	.	-7	81	-37	64	105	.
15	8	24	.	-29	-131	.	9	68	-24	103	.	57
16	18	.	37	-61	-94	-3	0	49	-32	115	.	17
17	62	-8	12	-73	-50	.	38	49	-24	167	48	-5
18	67	-19	.	.	-47	50	59	42	-8	218	3	.
19	67	-62	.	.	-53	.	66	16	11	193	-28	-37
20	37	-65	-41	-85	-41	.	.	12	85	115	-45	.
21	.	-76	-91	-79	13	.	108	31	135	65	.	-39
22	.	-70	-119	-86	.	.	107	38	124	9	-65	-11
23	.	-68	-120	-51	72	59	73	52	60	-62	.	-2
24	-52	.	-102	5	61	.	34	67	6	-107	-43	35
25	-87	-75	.	43	.	29	29	92	-79	-128	-20	4
26	.	.	-88	70	126	18	34	64	-115	.	58	39
27	.	-8	-52	67	109	.	28	15	-138	-61	83	17
28	.	.	-20	84	50	44	33	-12	-144	-60	96	29
29	.		31	122	24	62	43	-64	-121	-19	59	.
30	-59		45	61	-9	50	38	-84	-75	67	55	24
31	-4		55		-4		1	-143		87		.

DOT SYMBOL ENTRY INDICATES NO DATA AVAILABLE FOR THE DAY.

BOULDER GEOMAGNETIC SUBSTORM LOG

NOVEMBER 1981

DATE	ONSET TIME	DIR	COMMENTS
11/01	1035		SS response confined to oval stations.
11/02			Field slightly unsettled.
11/03			Field slightly unsettled.
11/04			Field quiet through 1500 UT then slightly unsettled.
11/05			Field unsettled 0500-1700 UT.
	0540	East	Weak SS
	1205	West	
11/06	1010		Weak SS Norman Wells to Ft. Simpson.
	1200		Weak SS vicinity College.
11/07			Field unsettled 0400-1700 UT.
	0450	≈ center	
	0755		Localized SS vicinity Lynn Lake.
	1120		Localized SS vicinity College.
	1245	West	Several injections with recovery near 1430 UT.
	1525		Weak SS
11/08	0640	East	
	0835	≈ center	Moderate SS
	1210		Localized SS vicinity College.
	1612	SSC	Following this sudden commencement the field went quiet. It appears this is a reverse (shut-off) shock.
11/09	1105		Weak SS
11/10	0615	East	Weak SS
	1030	West	Moderate SS. Slow expansion northward and eastward from College.
11/11	1238	SSC	Magstorm follows.
11/12			Field active through 1400 UT, with numerous injections.
11/13			Field quiet until 2000 UT, and then unsettled balance of day.
11/14	0530		Slow positive impulse H-component all mid/low latitude stations. Magnetic storm conditions 1100-1600 UT, with field remaining active balance of day.
11/15			Field intermittently unsettled.
	0500	West	
	1010	West	
	1325		Several injections with recovery near 1700 UT.
11/16			Field intermittently unsettled.
	0525	West	
	0755		Localized SS vicinity Norman Wells.
	2020		Positive impulse H-component all mid/low latitude stations.
11/17	1000	West	Strong SS Numerous injections 1230-2100 UT but response times varied among network stations.
11/18			Field moderately unsettled 0600-2200 UT. Injections again sporadic among the network stations.
11/19	0920	West	
	1225	West	
11/20			Field unsettled 0600-1600 UT.
	0850		Weak SS
	1050		Weak SS
	1135		Localized SS vicinity College.
	1255		Weak SS
11/21			Field unsettled after 0600 UT.
	0730		Weak SS
	1155		Localized SS vicinity College
11/22	0735	West	
	0855	West	
11/23			Field active 0600-1900 UT.
	1140	West	
	1525		Localized SS vicinity College.
11/24			Field unsettled 0500-1500 UT.
	1320	West	
11/25	0229	SSC	Field unsettled through 1900 UT.
11/26			Field unsettled with no distinctive SS activity.
11/27	0815	West	Field quiet after 1000 UT.
11/28			Field slightly unsettled.
11/29			Quiet day.
11/30			Quiet day.

SGD 448 Part I (Prompt)

OCTOBER 1981 DATA

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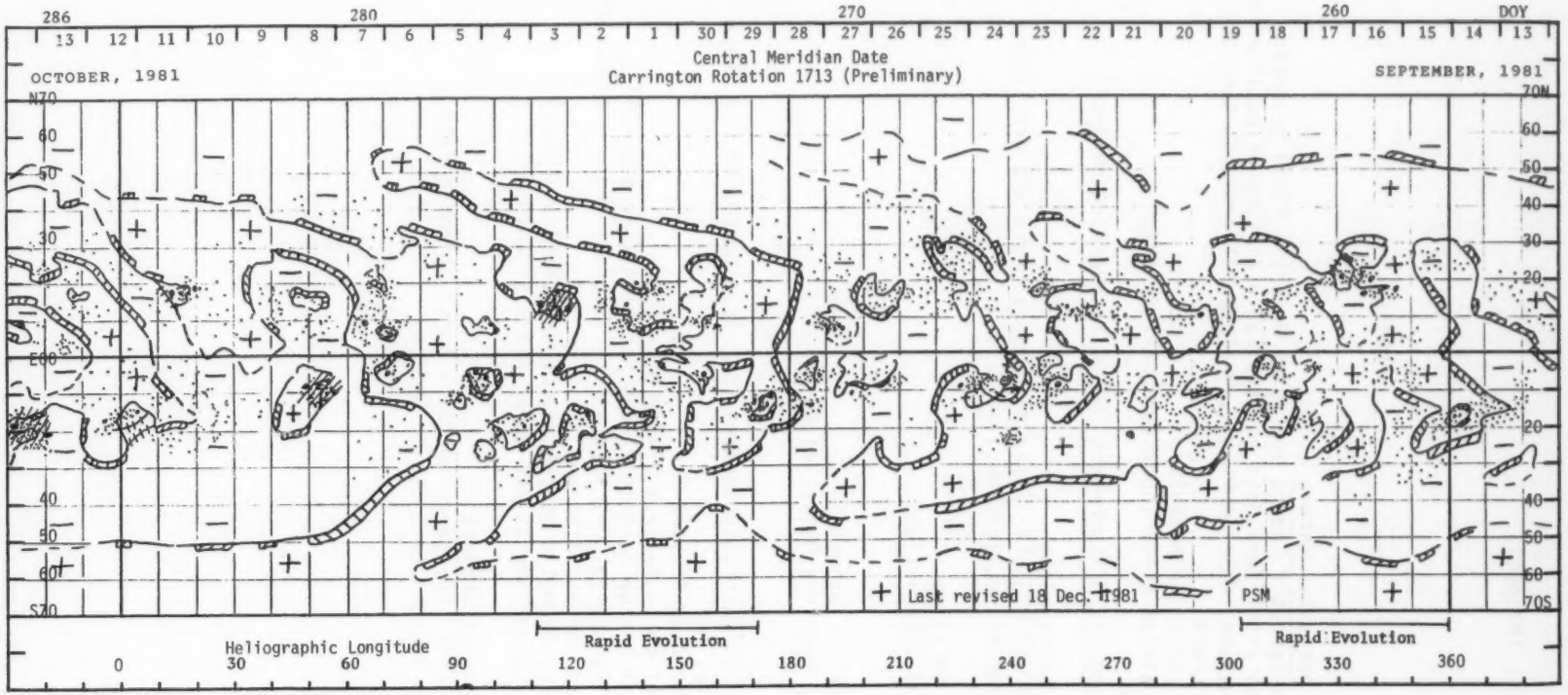
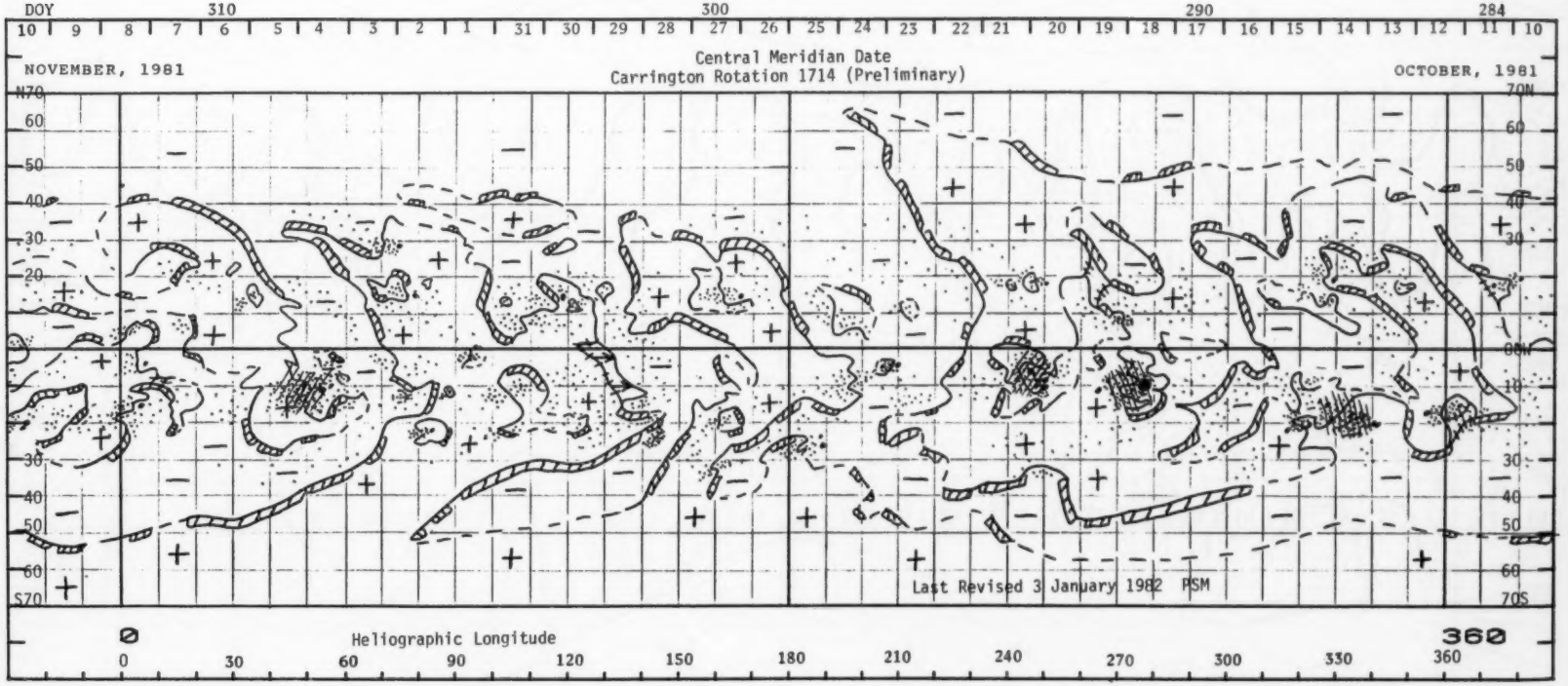
Hα SYNOPTIC CHART

CARRINGTON ROTATION 1713 (PRELIMINARY)



Hα SYNOPTIC CHART

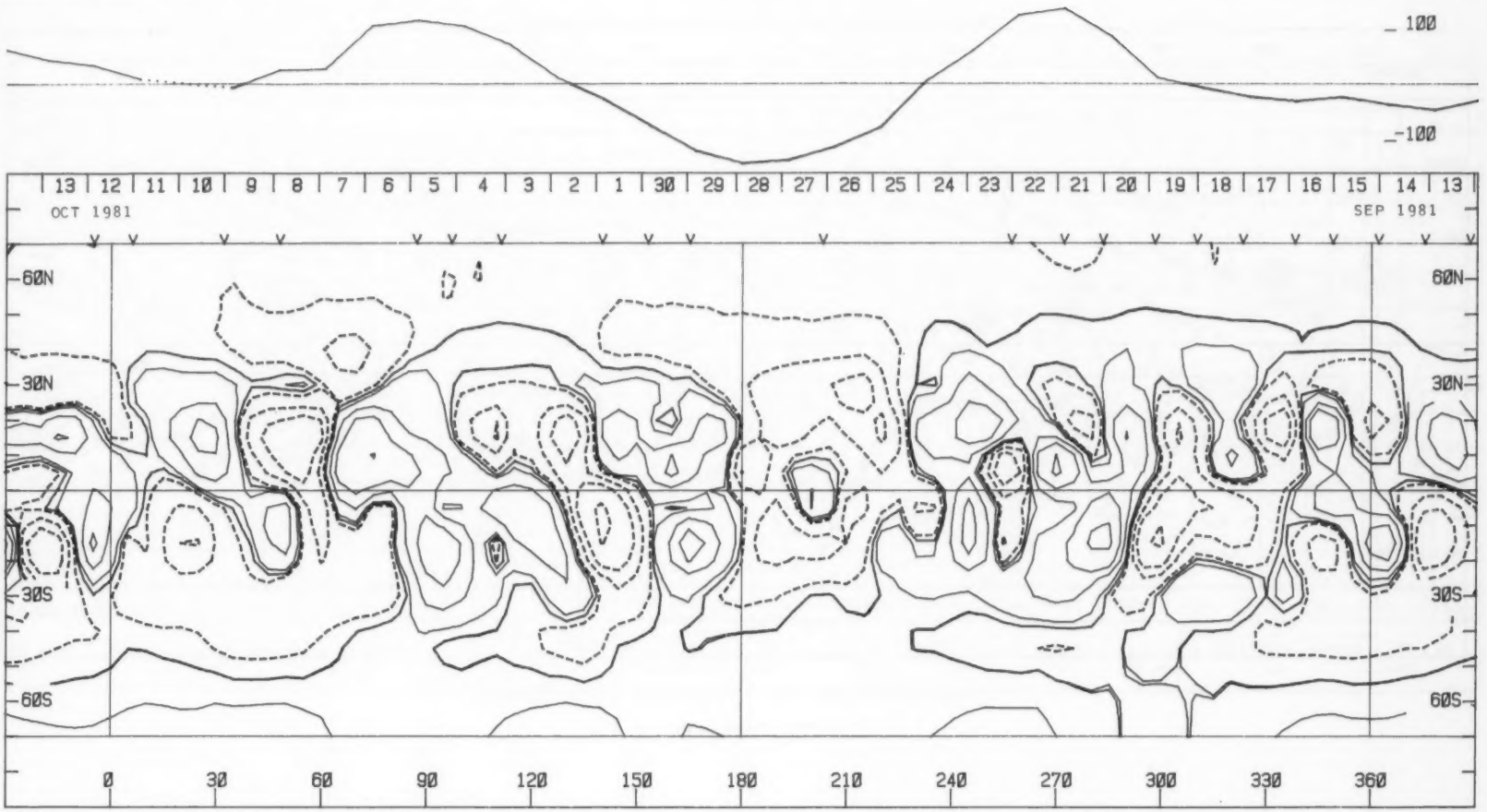
CARRINGTON ROTATION 1714 (PRELIMINARY)



SOLAR MAGNETIC FIELD SYNOPTIC CHART
CARRINGTON ROTATION 1713

Stanford Solar Observatory

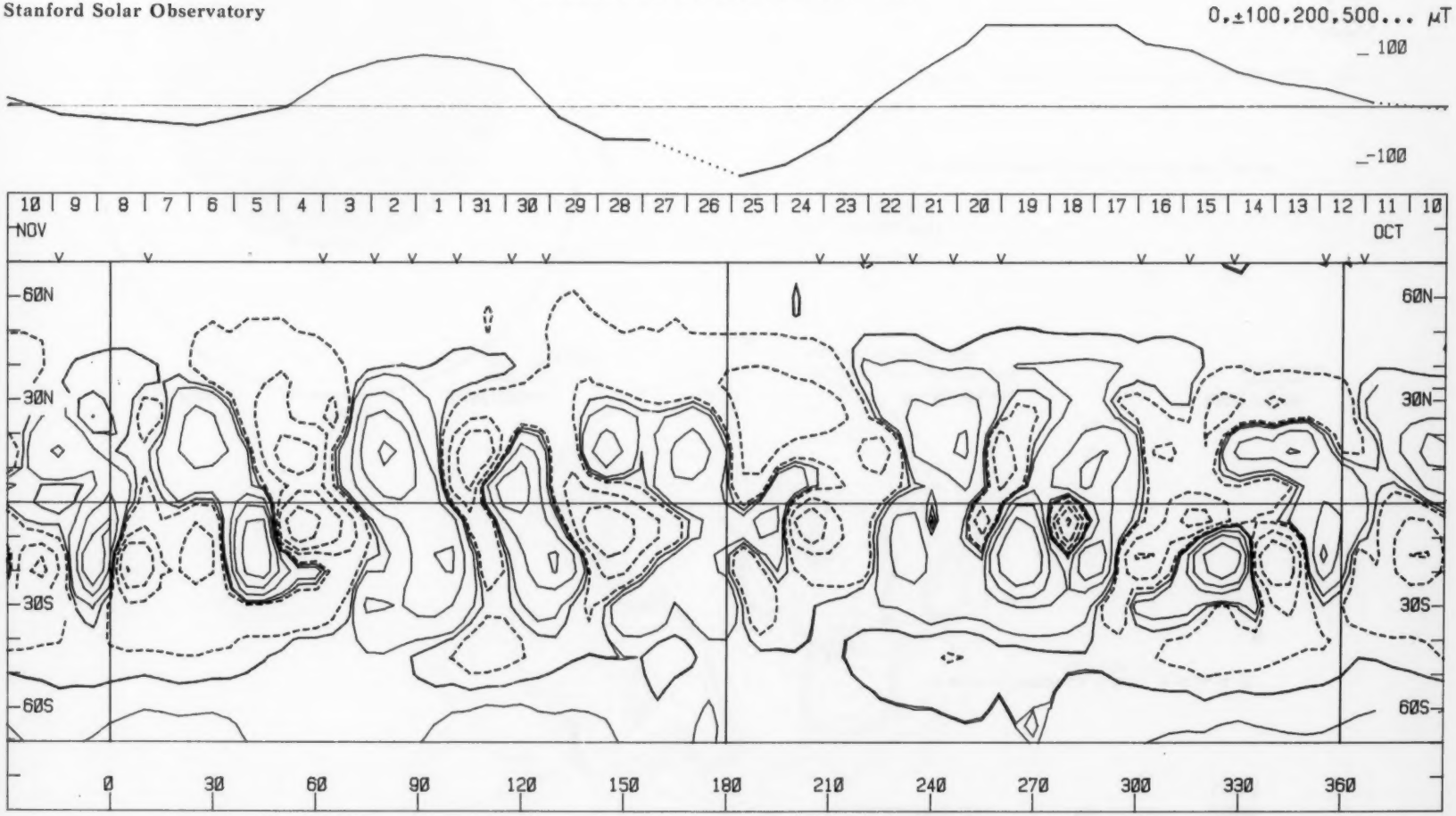
0, ±100, 200, 500... μT



SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION 1714

Stanford Solar Observatory



51
Oct 81

OCTOBER 1, 1981 (P= 26.01, B_o = 6.71, L_o = 149.68)

SACRAMENTO PEAK Np CORONA
5303 Å

NO DATA OCTOBER 1, 2, 3, 5, 6, 7, 8, 10, 11, 12, 13, 19, 21, 23, 27

E W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY =
DELTAX =

E NO DATA OCTOBER 1, 2, 3, 4, 11, 12, 28 W

E NO DATA OCTOBER 1, 2, 3, 9, 10, 11, 12, 13, 14, 27, 28, 29 W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

Sp

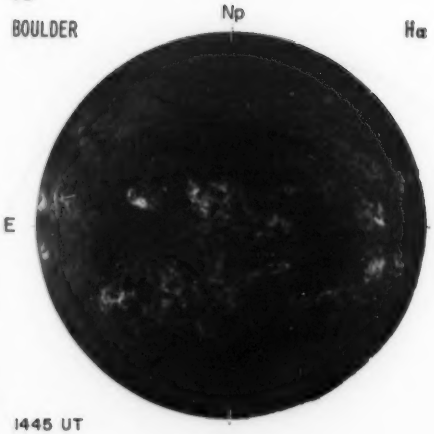
01

Np

Sp

OI

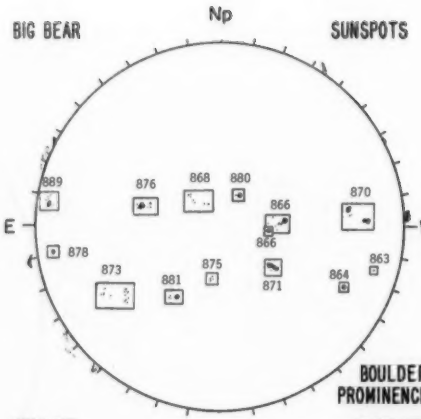
BOULDER



1445 UT

Hα

BIG BEAR



1904 UT

SUNSPOTS

BIG BEAR

1445 UT

ACTIVE REGIONS

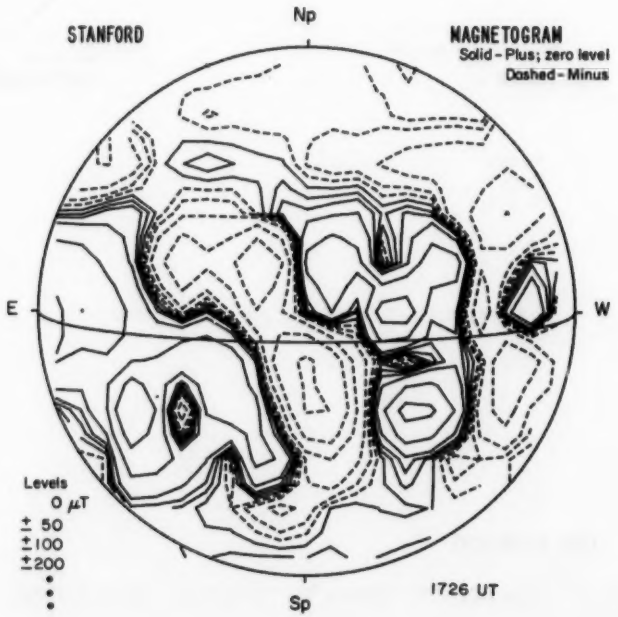
NO DATA OCTOBER 1, 2, 3, 4, 11, 12, 25, 27, 28

STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



1726 UT

OCTOBER 2, 1981 (P= 26.07, B_o = 6.66, L_o = 136.49)

SACRAMENTO PEAK Np CORONA 5303 Å

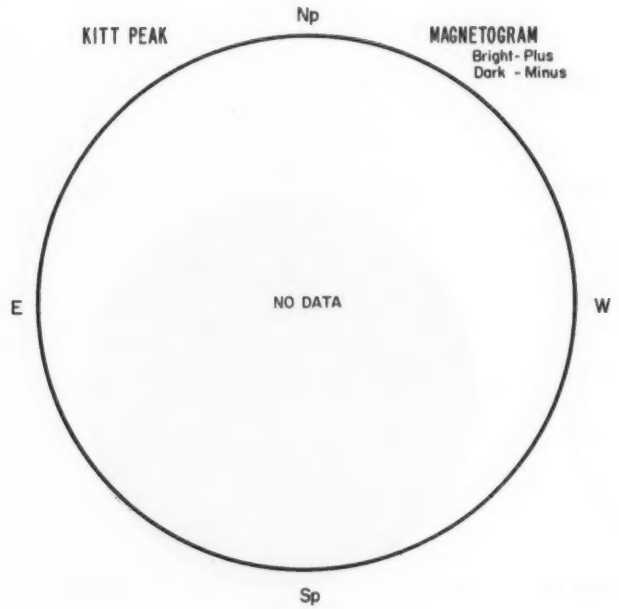
E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

Sp

Levels
± 5
± ± 10
± ± ± 20
± ± ± ± 40
± ± ± ± ± 80

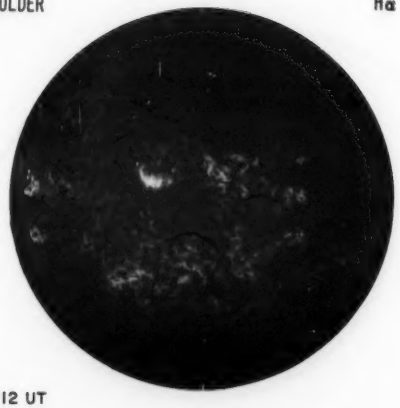
02

Sp

02

BOULDER

Np



E W

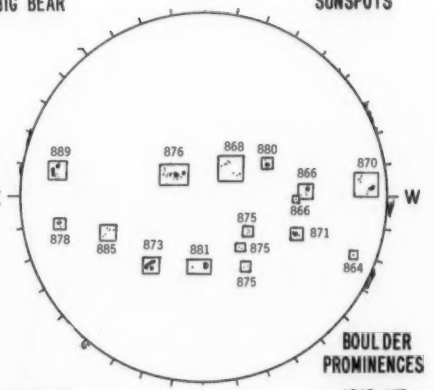
1612 UT

Sp

Hα

BIG BEAR

Np



E W

2045 UT

Sp

SUNSPOTS

BIG BEAR

Np

BOULDER PROMINENCES

1612 UT

Sp

ACTIVE REGIONS

NO DATA

E W

Sp

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E NO DATA OCTOBER 2, 6, 7, 10, 13, 17, 18, 24, 25, 26, 27, 28 W

Levels

0 μT

± 50

±100

±200

•

•

•

Sp

OCTOBER 3, 1981 (P= 26.13, B_o = 6.61, L_o = 123.29)

SACRAMENTO PEAK

Np

CORONA
5303 Å

E

NO DATA

W

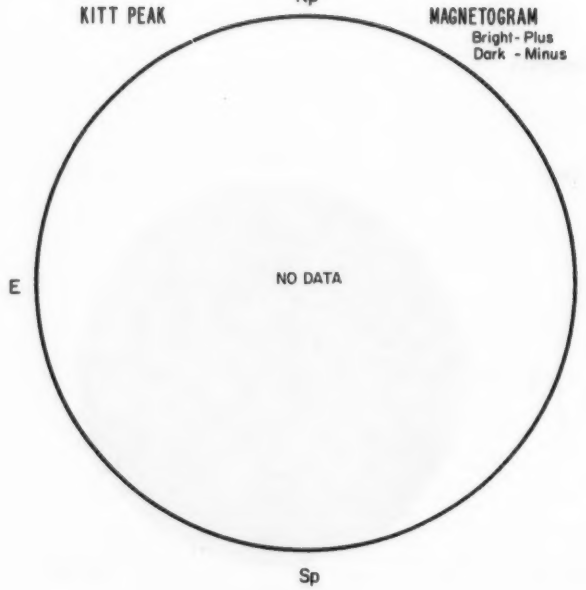
1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON

DELTAY =
DELTAX =

MAGNETOGRAM
Solid-Plus
Dotted-Minus

E

NO DATA

W

Sp

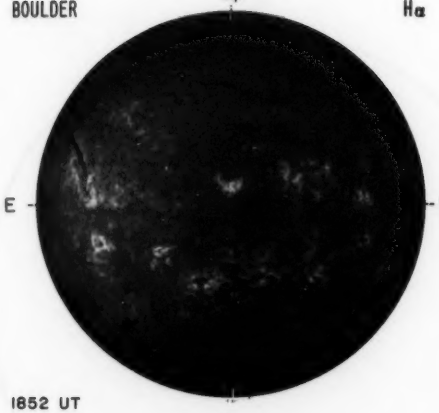
Levels
± 5
± ± 10
± ± 20
± ± 40
± ± 80

Sp

03

BOULDER

Np



E W

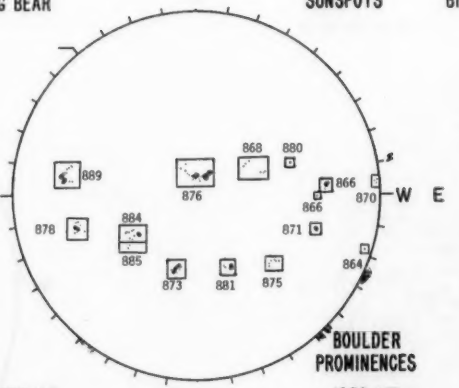
1852 UT

Sp

Hα

BIG BEAR

Np



E W E

1735 UT

Sp

SUNSPOTS

BIG BEAR

Np

BOULDER PROMINENCES

1852 UT

Sp

ACTIVE REGIONS

Np

NO DATA

E W

Sp

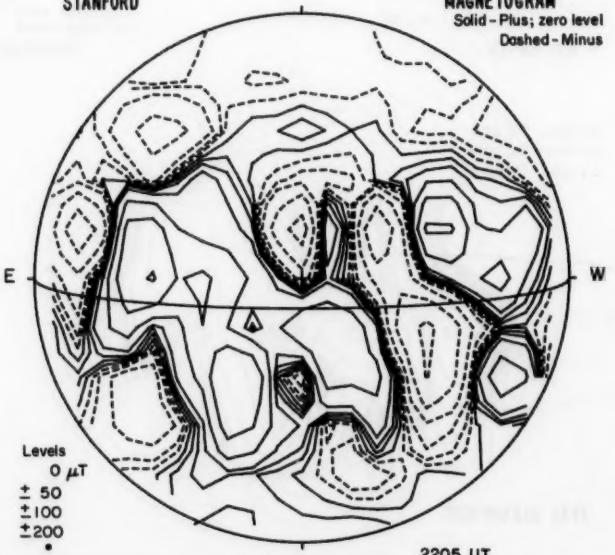
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

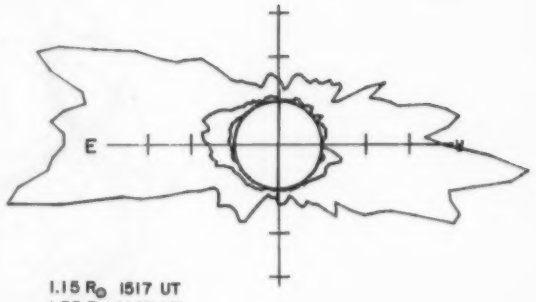
±200

2205 UT

Sp

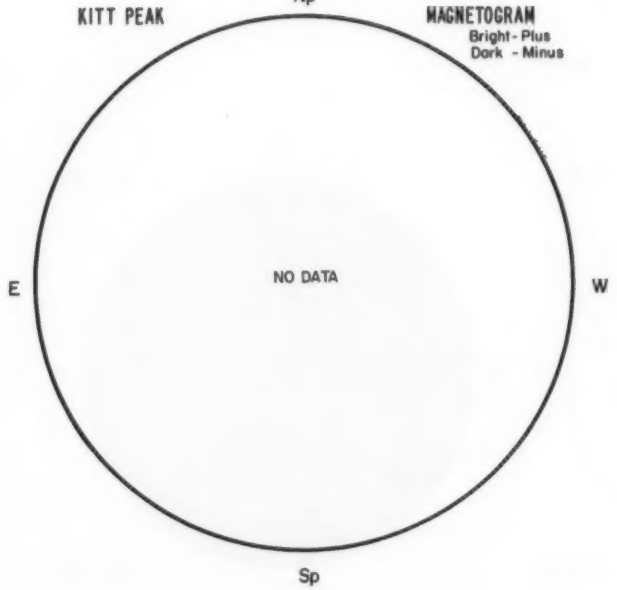
OCTOBER 4, 1981 (P= 26.18, B_o= 6.56, L_o= 110.10)

SACRAMENTO PEAK Np CORONA 5303 Å

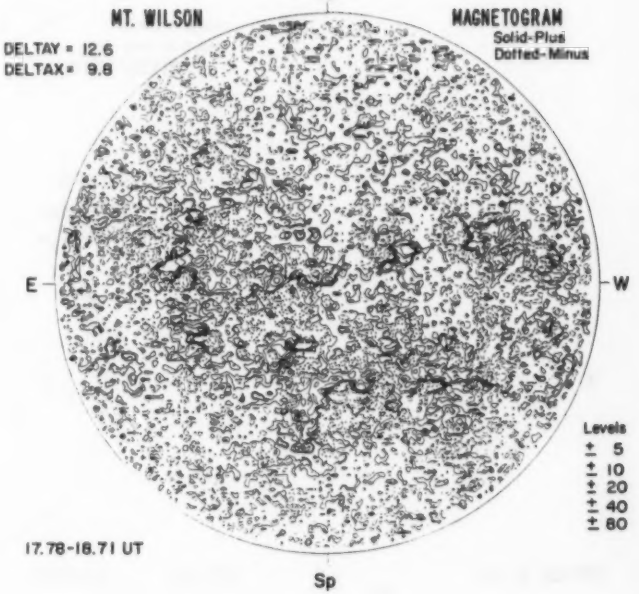


1.15 $R_\odot$ 1517 UT
1.35 $R_\odot$ 1445 UT
1.55 $R_\odot$ 1503 UT

KITT PEAK Np MAGNETOGRAM Bright - Plus Dark - Minus



Sp
Np
MT. WILSON MAGNETOGRAM Solid - Plus Dotted - Minus
DELTAY = 12.6
DELTAX = 9.8



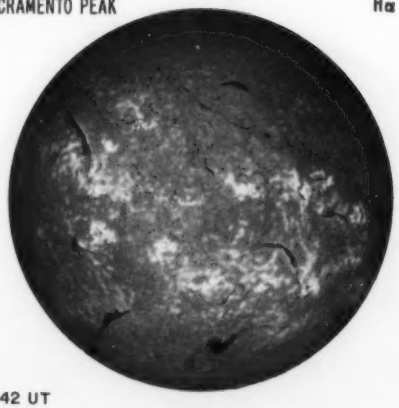
17.78-18.71 UT

04

SACRAMENTO PEAK

Np

Hα



E W

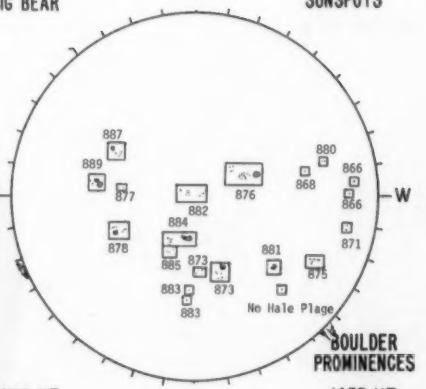
Sp

1542 UT

BIG BEAR

Np

SUNSPOTS



E W

Sp

2025 UT

BIG BEAR

Np

BOULDER PROMINENCES

NO DATA

E W

Sp

1455 UT

ACTIVE REGIONS

Np

Sp

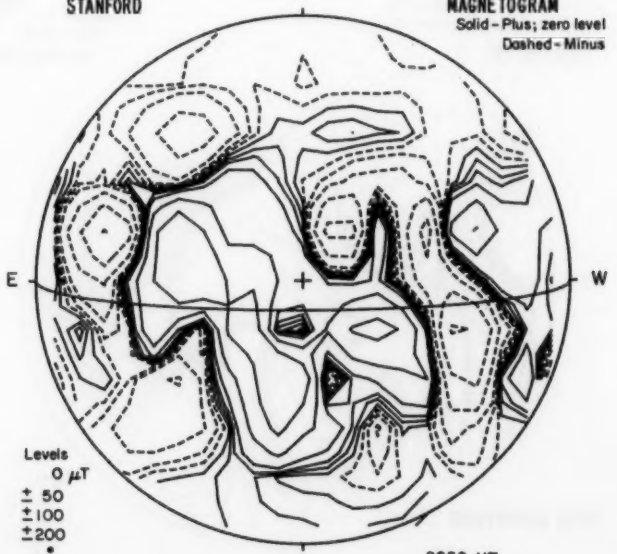
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

Sp

2252 UT

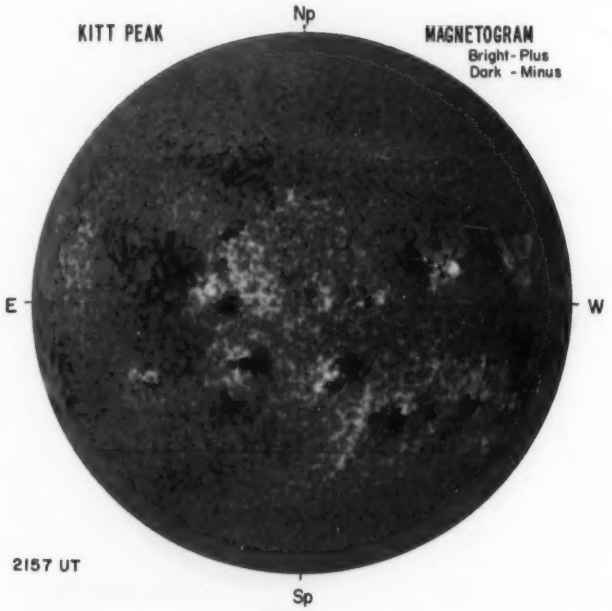
OCTOBER 5, 1981 (P= 26.22, B_o= 6.50, L_o= 96.90)

SACRAMENTO PEAK Np CORONA
5303 Å

E NO DATA W

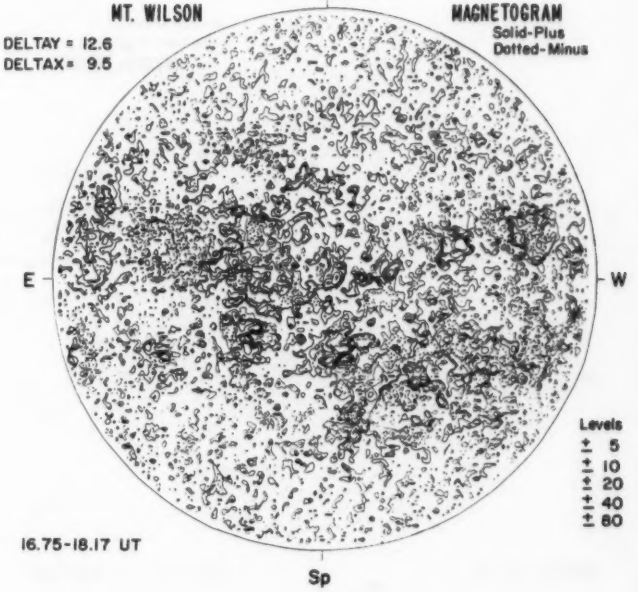
1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

KITT PEAK MAGNETOGRAM
Bright-Plus
Dark - Minus



2157 UT

Sp
Np
MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 12.6
DELTAX = 9.5

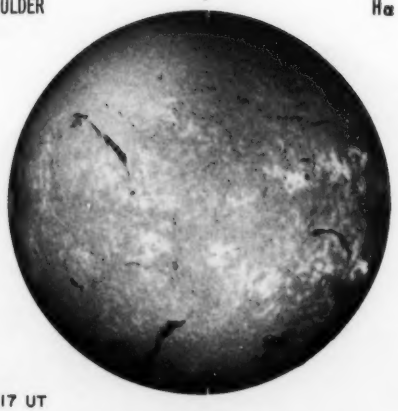


Levels
± 5
± 10
± 20
± 40
± 80

16.75-18.17 UT

05

BOULDER Np Hα

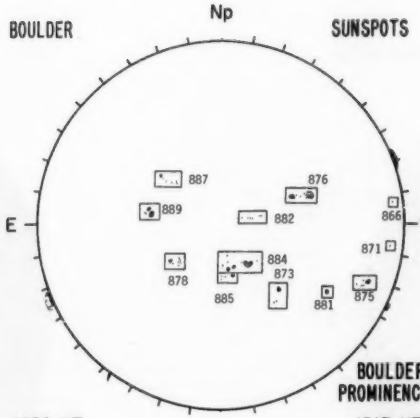


E W

Sp

1517 UT

BOULDER Np SUNSPOTS



E W

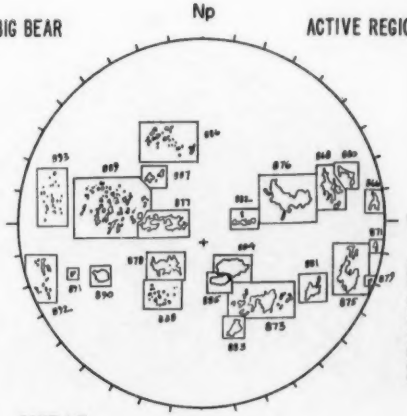
Sp

1450 UT

BOULDER PROMINENCES

1517 UT

BIG BEAR Np ACTIVE REGIONS



E W

Sp

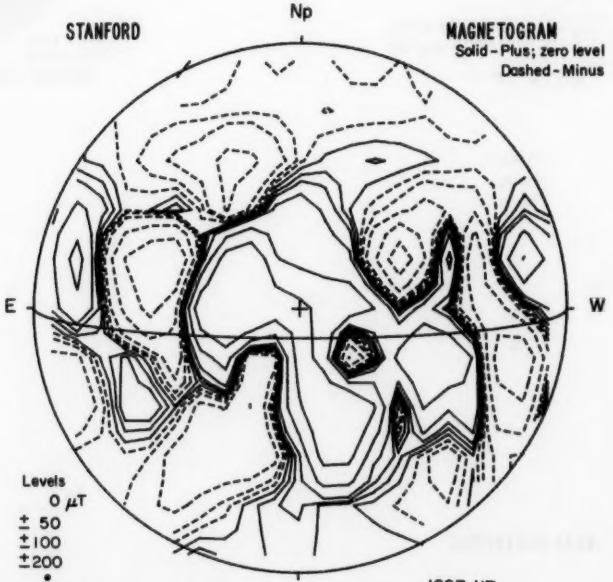
2157 UT

FAIR	UM
68- 2000-2.5	
75- 3200-3.0	
76- 2400-3.5	
78- 1000-3.0	
80- 0600-2.5	
84- 1700-3.0	
90- 0500-3.5	

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

Sp

1807 UT

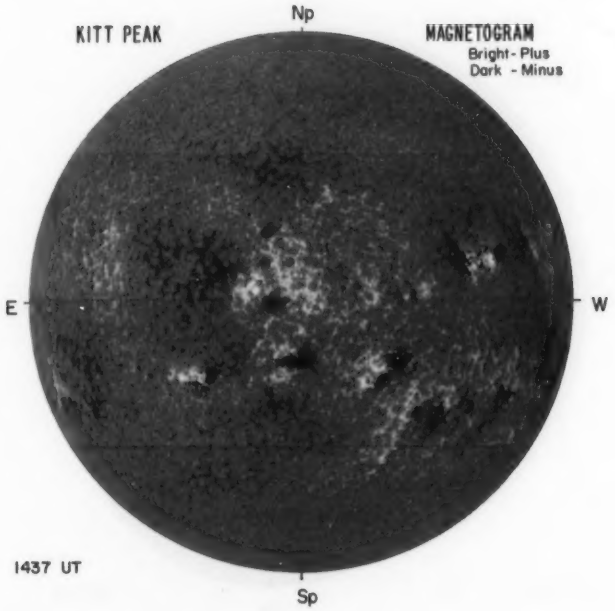
OCTOBER 6, 1981 (P= 26.25, B_o= 6.45, L_o= 83.71)

SACRAMENTO PEAK Np CORONA
5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

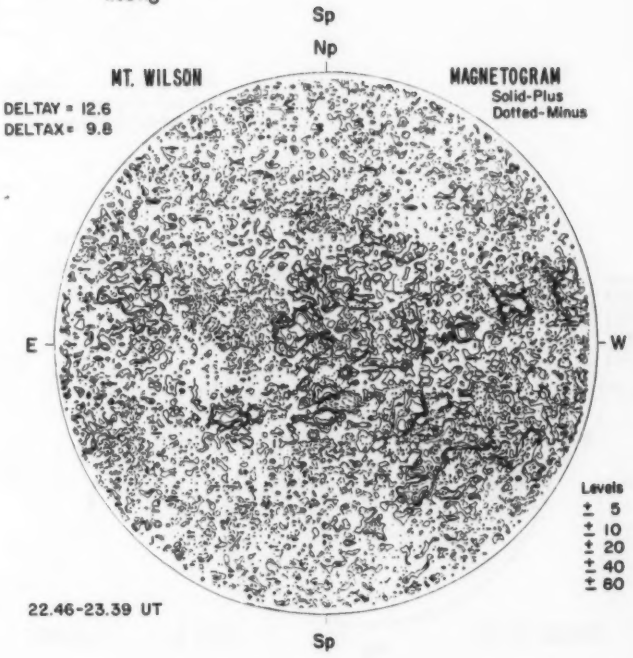
KITT PEAK



MAGNETOGRAM
Bright - Plus
Dark - Minus

1437 UT

MT. WILSON



DELTAY = 12.6
DELTAX = 9.8

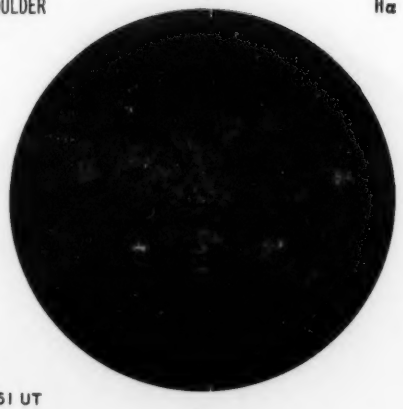
MAGNETOGRAM
Solid-Plus
Dotted-Minus

Levels
± 5
± 10
± 20
± 40
± 80

22.46-23.39 UT

06

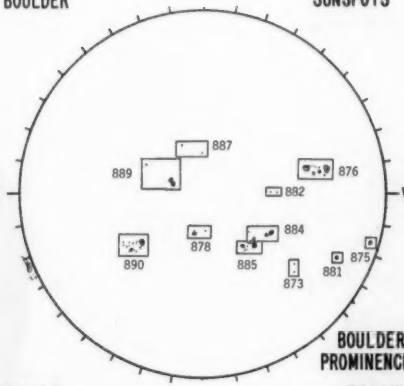
BOULDER Np Hα



E W

1751 UT Sp

BOULDER Np SUNSPOTS

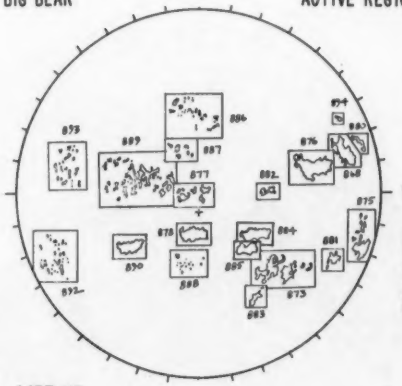


E W

1430 UT Sp 1751 UT

BOULDER PROMINENCES

BIG BEAR Np ACTIVE REGIONS



E W

1437 UT Sp

GOOD	WM
76- 2600-3.5	
78- 1000-2.5	
80- 0600-2.5	
84- 2000-2.5	

STANFORD Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E NO DATA W

Levels

0 μT

± 50

±100

±200

•

•

•

Sp

63

Oct 81

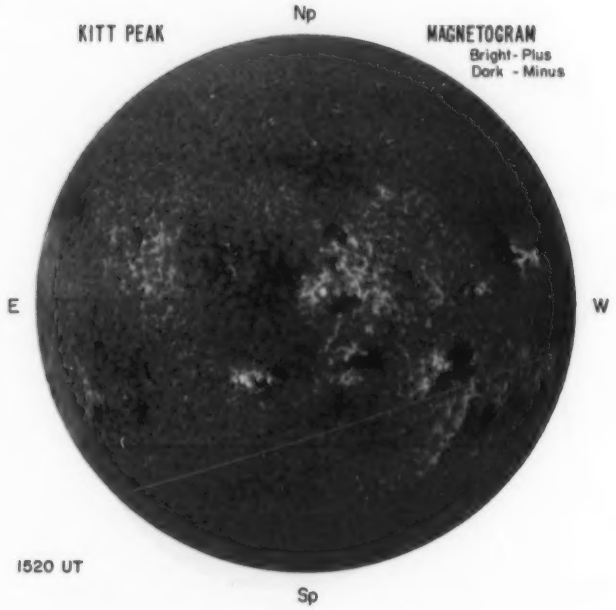
OCTOBER 7, 1981 (P= 26.28, B_o= 6.39, L_o= 70.52)

SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

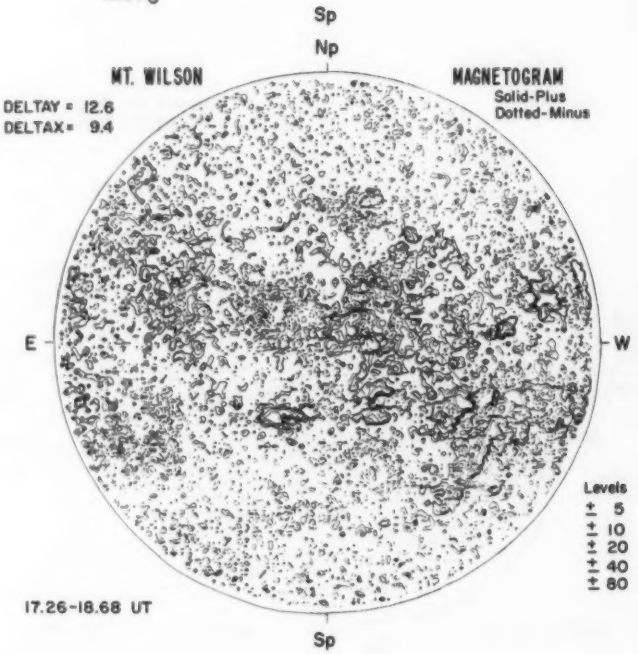
KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



1520 UT

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4



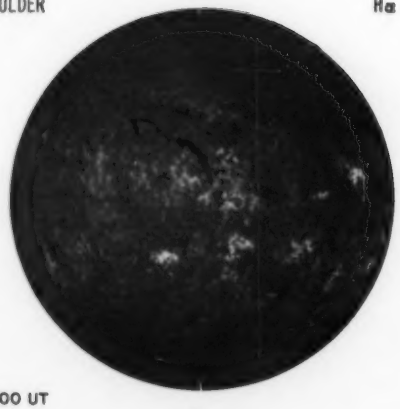
Levels
± 5
± 10
± 20
± 40
± 80

17.26-18.68 UT

07

07

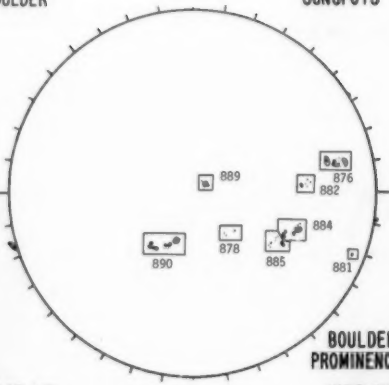
BOULDER Np Hα



E W

1500 UT Sp

BOULDER Np SUNSPOTS



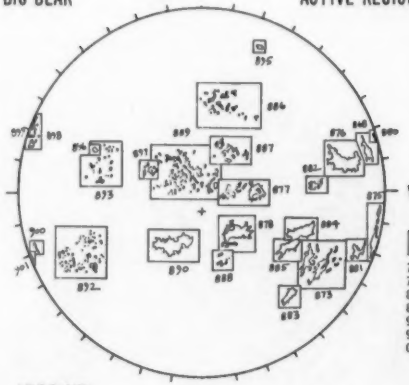
E W

1445 UT Sp

BOULDER PROMINENCES

1500 UT

BIG BEAR Np ACTIVE REGIONS



GOOD	WM
76-	3000-3.5
78-	1300-3.0
81-	0600-2.5
84-	1700-2.5
90-	1800-3.5
99-	0500-2.5
01-	0500-3.0

E W

1520 UT Sp

STANFORD Np

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

E NO DATA W

Levels
0 μT
± 50
±100
±200
•
•
•

Sp

OCTOBER 8, 1981 (P= 26.30, B_o= 6.33, L_o= 57.32)

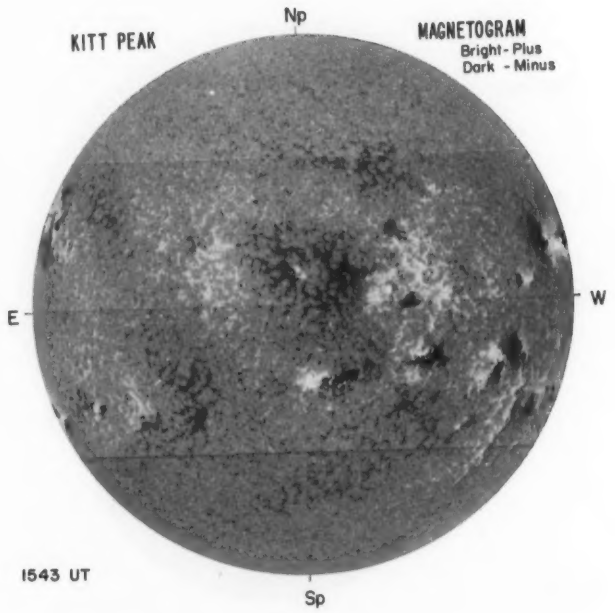
SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

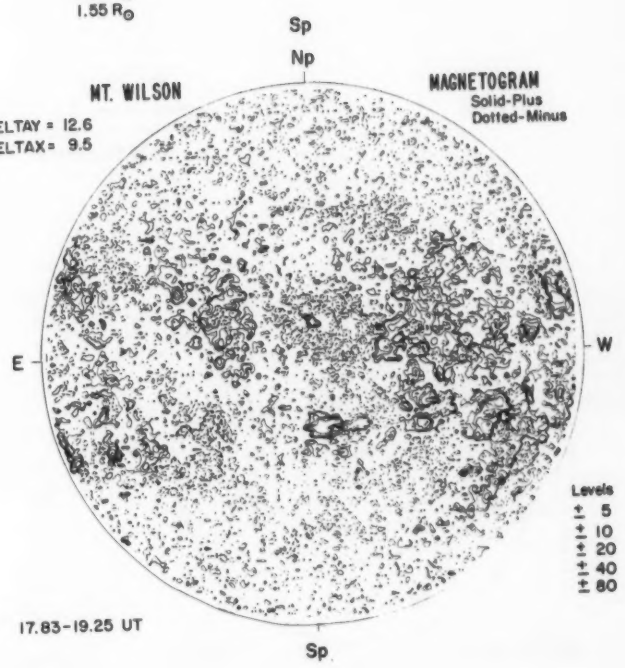


1543 UT

MT. WILSON

DELTAY = 12.6
DELTAX = 9.5

MAGNETOGRAM
Solid-Plus
Dotted-Minus



Levels
± 5
± 10
± 20
± 40
± 80

17.83-19.25 UT

Sp

08

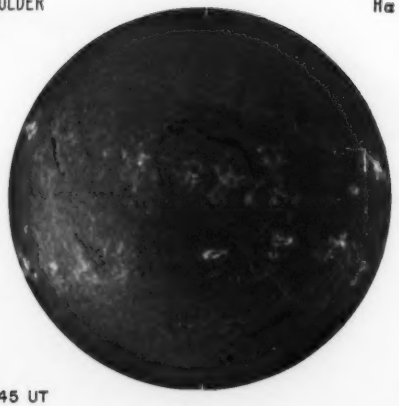
BOULDER

Np

Hα

E

W



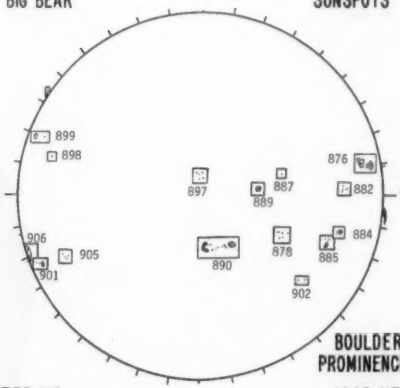
1445 UT

Sp

BIG BEAR

Np

SUNSPOTS



E

W

1755 UT

Sp

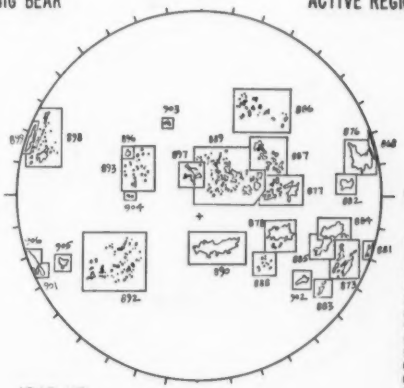
BOULDER PROMINENCES

1445 UT

BIG BEAR

Np

ACTIVE REGIONS



E

W

1543 UT

Sp

GOOD	WSM
76- 3800-3.5	
78- 1400-2.5	
82- 0700-3.0	
84- 1700-3.0	
90- 2200-3.0	
98- 2500-3.5	
99- 1500-3.0	
01- 0800-3.0	
05- 0400-3.5	
06- 2000-3.5	

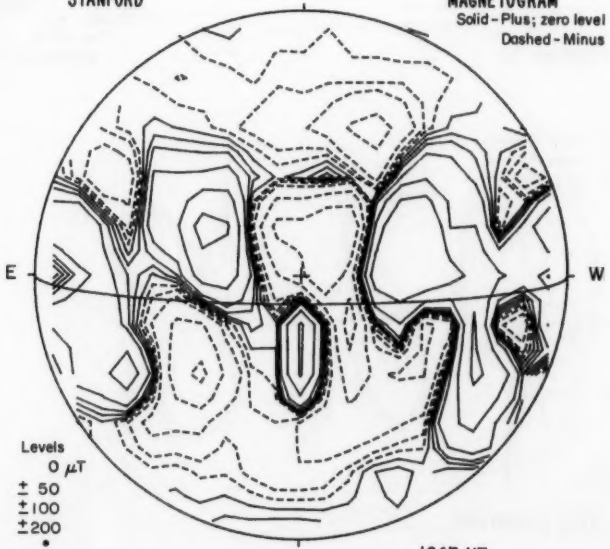
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

±200

•

•

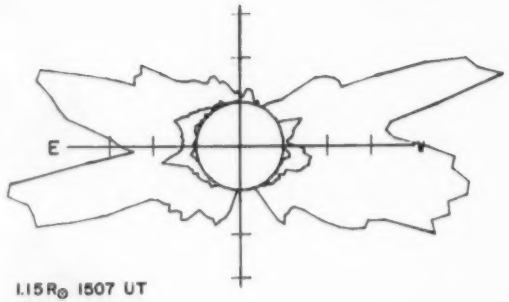
•

Sp

1647 UT

OCTOBER 9, 1981 (P= 26.32, B_o= 6.27, L_o= 44.13)

SACRAMENTO PEAK Np CORONA
5303 Å

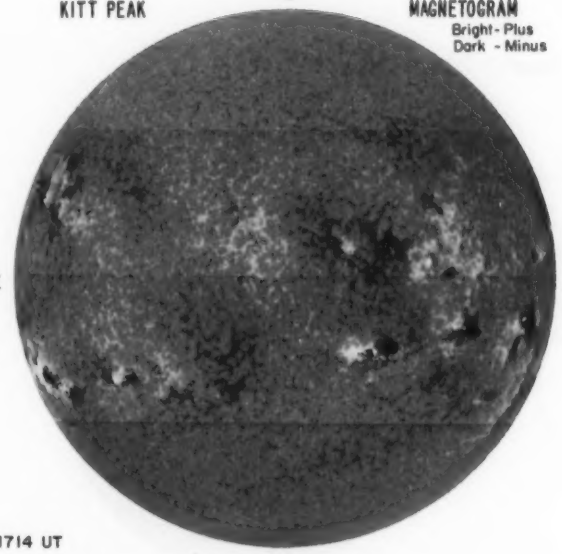


1.15$R_\odot$ 1507 UT
1.35$R_\odot$ 1446 UT
1.55$R_\odot$ 1457 UT

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



1714 UT

Sp

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

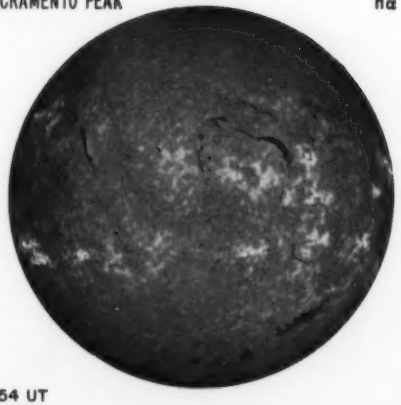
Levels
± 5
± 10
± 20
± 40
± 80

Sp

Sp

09

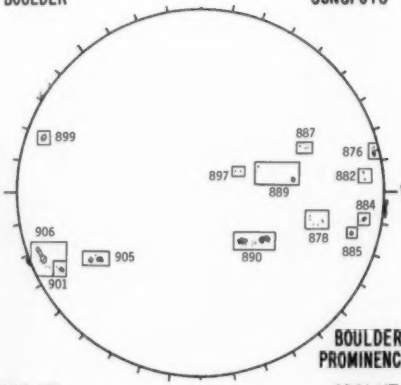
SACRAMENTO PEAK Np Hα



E W

1354 UT Sp

BOULDER Np SUNSPOTS

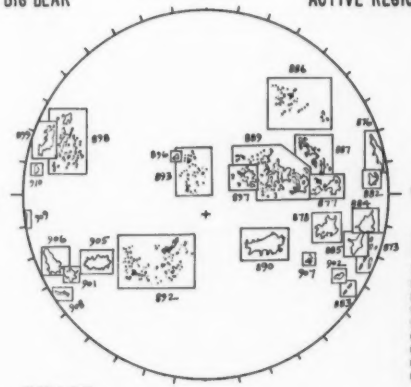


E W

BOULDER PROMINENCES

1620 UT 1641 UT Sp

BIG BEAR Np ACTIVE REGIONS



E W

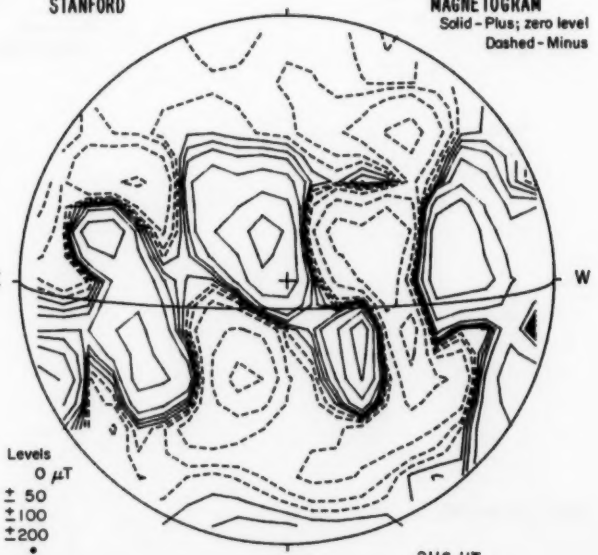
1714 UT Sp

GOOD	WM
76- 3500-3.0	
82- 0900-2.5	
84- 2100-2.5	
90- 2700-3.5	
98- 2200-2.5	
01- 0900-4.0	
05- 1500-3.0	
06- 3000-3.5	
09- 0400-3.0	

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

•

•

•

2116 UT Sp

OCTOBER 10, 1981 (P= 26.32, B_o= 6.20, L_o= 30.94)

SACRAMENTO PEAK Np CORONA 5303 Å

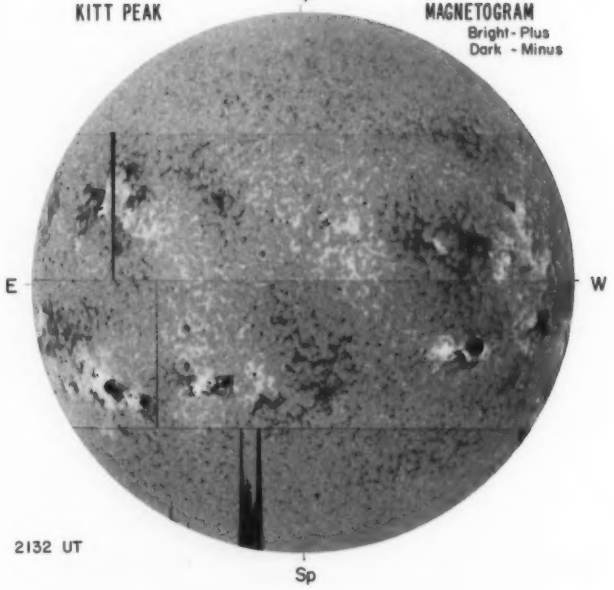
E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



Sp

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

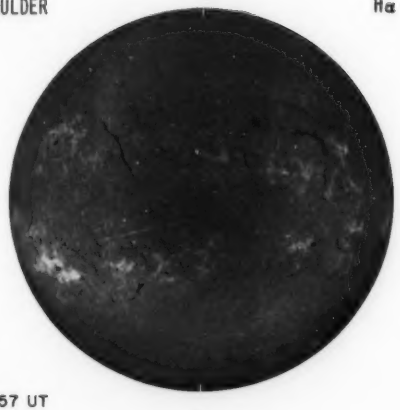
Levels
± 5
± 10
± 20
± 40
± 80

Sp

BOULDER

Np

Hα



E

W

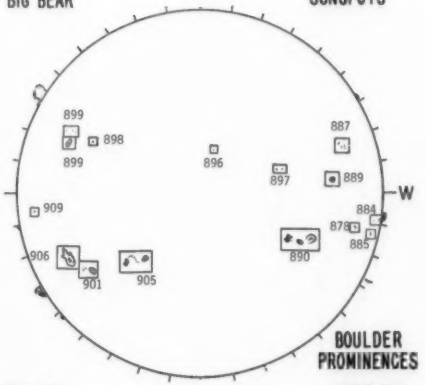
Sp

1557 UT

BIG BEAR

Np

SUNSPOTS



E

W

Sp

2100 UT

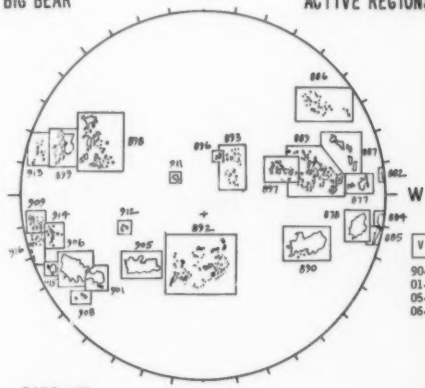
BOULDER PROMINENCES

1557 UT

BIG BEAR

Np

ACTIVE REGIONS



E

W

Sp

2132 UT

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

Sp

71

Oct 81

OCTOBER 11, 1981 (P= 26.32, B_o= 6.14, L_o= 17.75)

SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

KITT PEAK Np MAGNETOGRAM Bright - Plus Dark - Minus

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W E NO DATA W

Levels
± 5
± ± 10
± ± ± 20
± ± ± ± 40
± ± ± ± ± 80

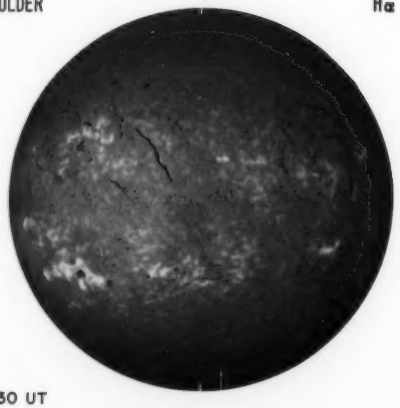
Sp Sp

Sp

11

BOULDER

Np



E W

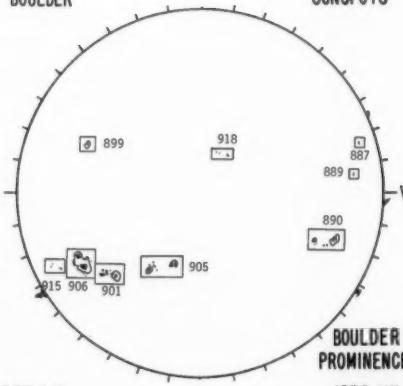
1530 UT

Sp

Hα

BOULDER

Np



1500 UT

Sp

SUNSPOTS

BIG BEAR

Np

BOULDER PROMINENCES

1530 UT

Sp

ACTIVE REGIONS

Np

NO DATA

E W

Sp

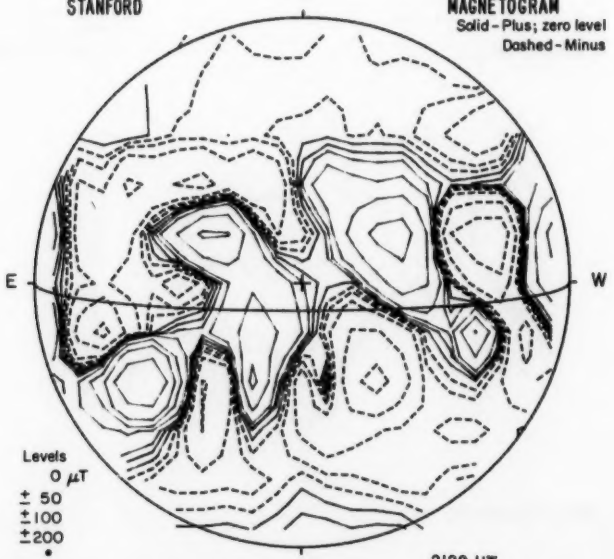
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



Levels

0 μT

± 50

±100

±200

•

•

•

Sp

2122 UT

73

Oct 81

OCTOBER 12, 1981 (P= 26.31, B_o= 6.07, L_o= 4.55)

SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

KITT PEAK MAGNETOGRAM Bright - Plus Dark - Minus

MT. WILSON MAGNETOGRAM Solid - Plus Dotted - Minus

DELTAY =
DELTAX =

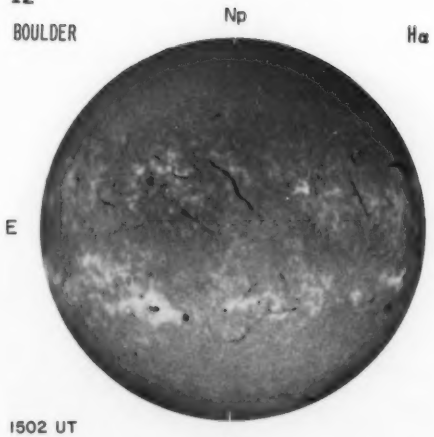
E NO DATA W E NO DATA W

Levels
± 5
± ± 10
± ± 20
± ± 40
± 80

Sp Sp

12

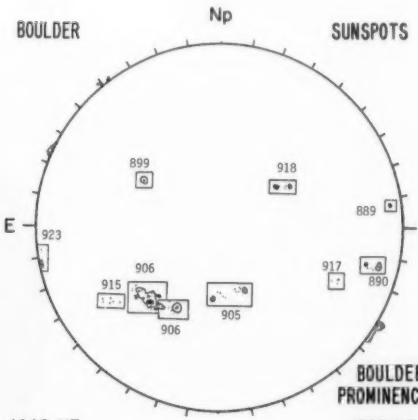
BOULDER



1502 UT

Hα

BOULDER



1440 UT

SUNSPOTS

BOULDER PROMINENCES

1502 UT

BIG BEAR

NO DATA

Np

Sp

ACTIVE REGIONS

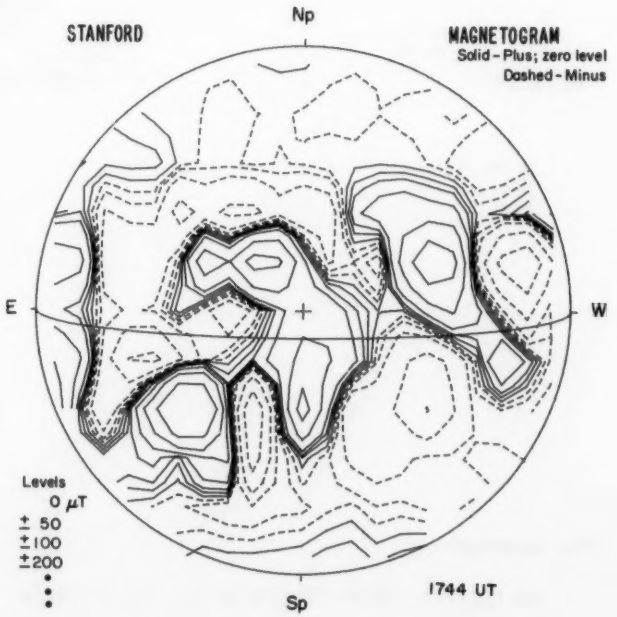
W

STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



1744 UT

OCTOBER 13, 1981 (P= 26.30, B_o = 6.00, L_o = 351.36)

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

W

1645 UT

Sp

SACRAMENTO PEAK

Np

CORONA
5303 Å

E

NO DATA

W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E

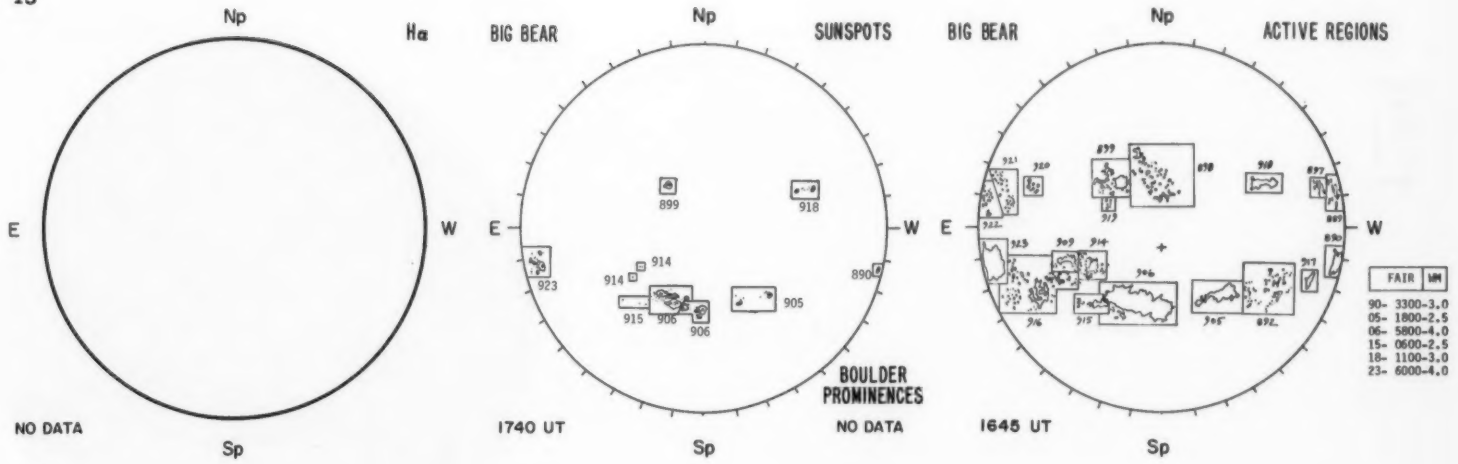
NO DATA

W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

13



STANFORD

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

E NO DATA W

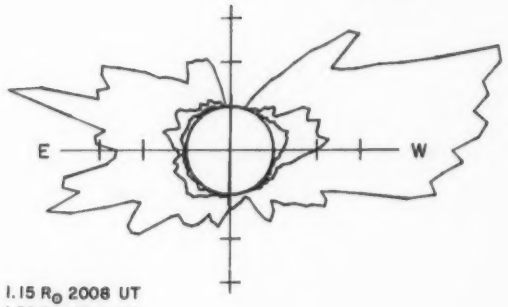
Levels
0 μT
± 50
±100
±200

Sp

77
Oct 81

OCTOBER 14, 1981 (P= 26.27, B_o= 5.93, L_o= 338.17)

SACRAMENTO PEAK Np CORONA
5303 Å



1.15 $R_\odot$ 2008 UT
1.35 $R_\odot$ 1947 UT
1.55 $R_\odot$ 1958 UT

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

1530 UT

Sp

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

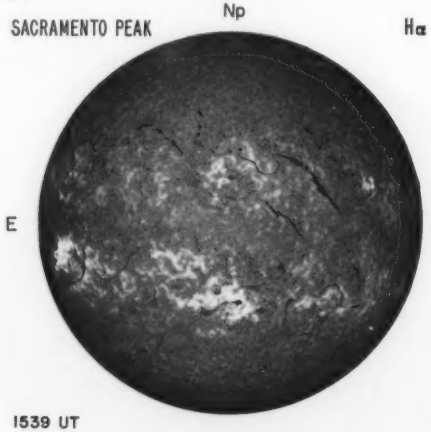
DELTAY =
DELTAX=

E NO DATA W

Levels
± 5
± ± 10
± ± ± 20
± ± ± ± 40
± ± ± ± ± 80

Sp

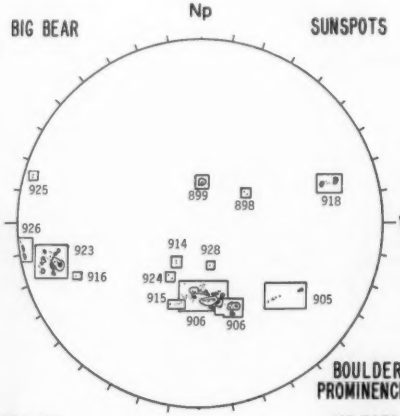
SACRAMENTO PEAK



Hα

1539 UT

BIG BEAR SUNSPOTS

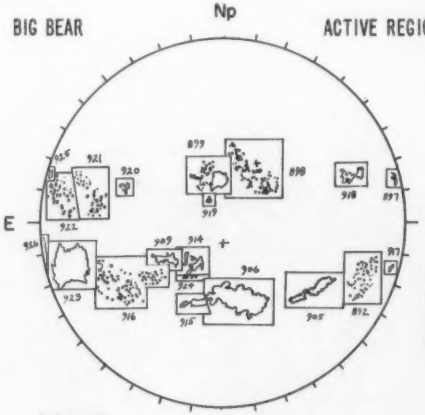


BOULDER PROMINENCES

NO DATA

1650 UT

BIG BEAR ACTIVE REGIONS

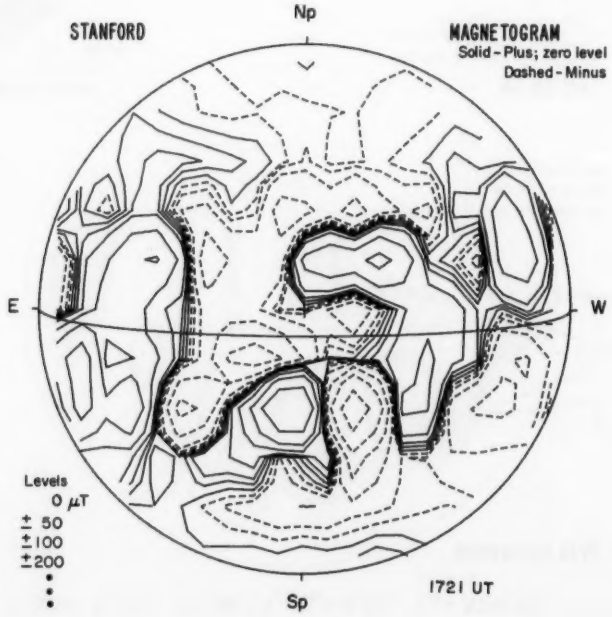


GOOD | MN
06- 6000-4.0
15- 0700-3.0
18- 1400-3.5
23- 8000-4.0

1530 UT

STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

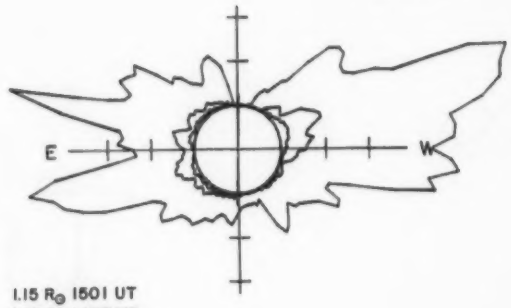


1721 UT

79
Oct 81

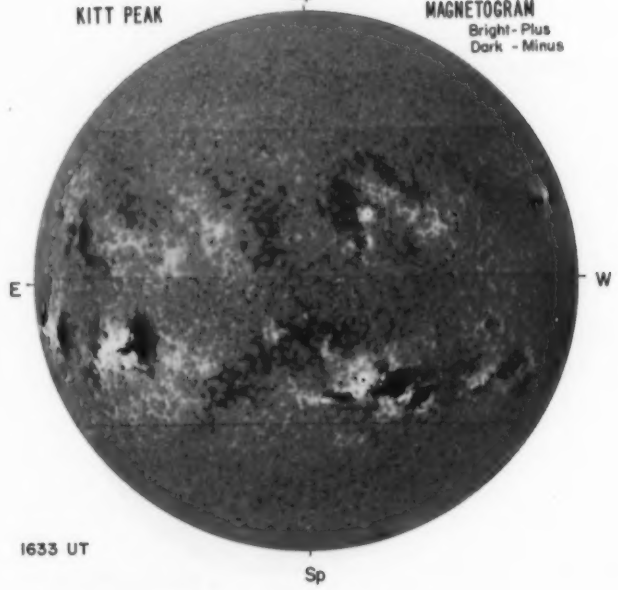
OCTOBER 15, 1981 (P= 26.24, B_o= 5.86, L_o= 324.98)

SACRAMENTO PEAK Np CORONA
5303 Å



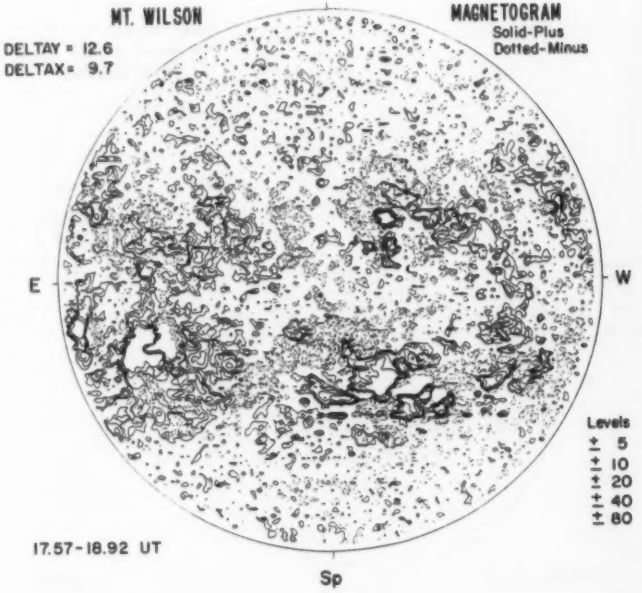
1.15 $R_\odot$ 1501 UT
1.35 $R_\odot$ 1437 UT
1.55 $R_\odot$ 1447 UT

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



1633 UT

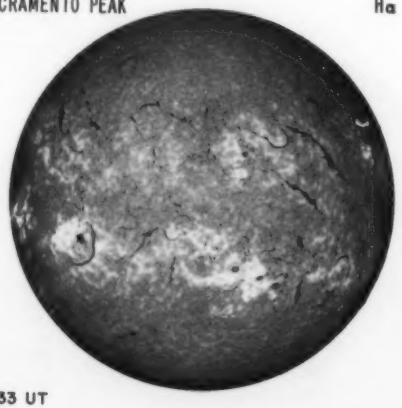
Sp
Np
MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 12.6
DELTAX = 9.7



17.57-18.92 UT

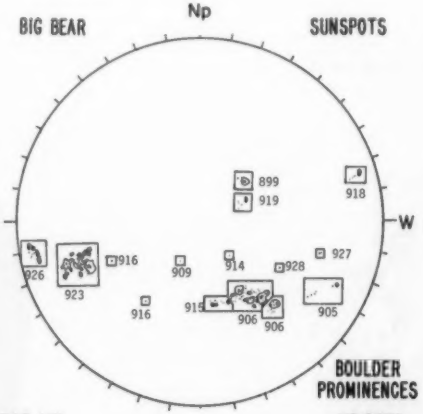
Sp

SACRAMENTO PEAK



1533 UT

BIG BEAR SUNSPOTS

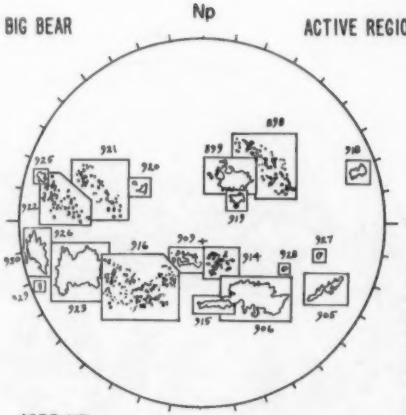


1845 UT

BOULDER PROMINENCES

NO DATA

BIG BEAR ACTIVE REGIONS

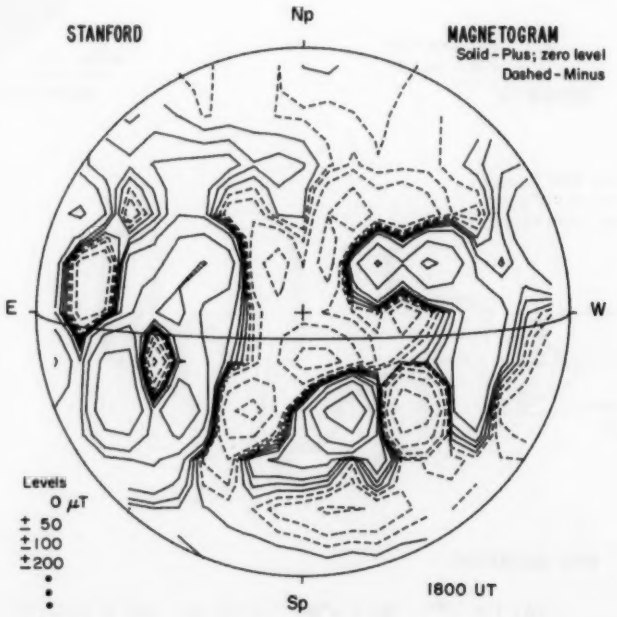


1633 UT

	POOR	MM
06-	6000	-3.5
15-	0900	-3.5
16-	2700	-2.5
18-	1400	-3.5
19-	0500	-2.5
23-	8100	-4.0
26-	4300	-3.5

STANFORD MAGNETOGRAM

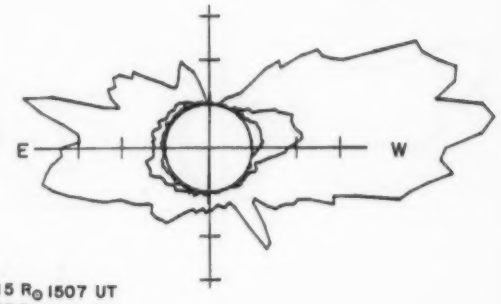
Solid - Plus; zero level
Dashed - Minus



1800 UT

OCTOBER 16, 1981 (P= 26.21, B_o = 5.78, L_o = 311.79)

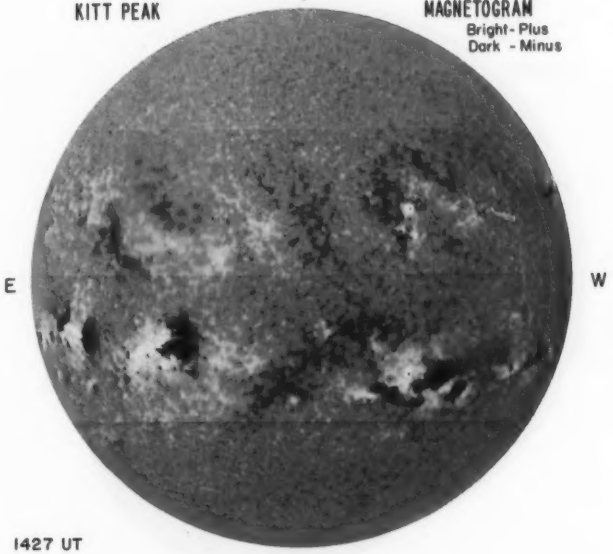
SACRAMENTO PEAK Np CORONA
5303 Å



1.15 $R_\odot$ 1507 UT
1.35 $R_\odot$ 1444 UT
1.55 $R_\odot$ 1456 UT

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



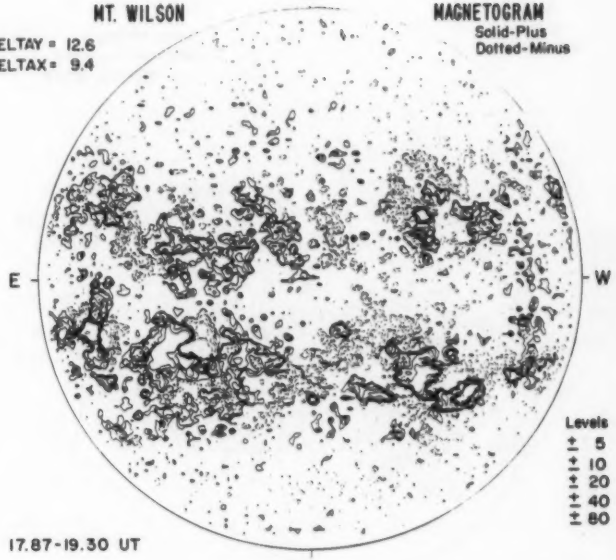
1427 UT

Sp

Np

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4



17.87-19.30 UT

Sp

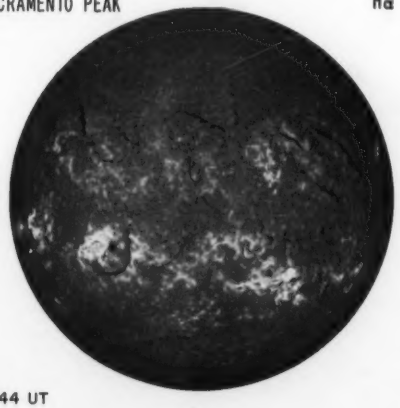
16

SACRAMENTO PEAK Np

SACRAMENTO PEAK

Np

Hα



E W

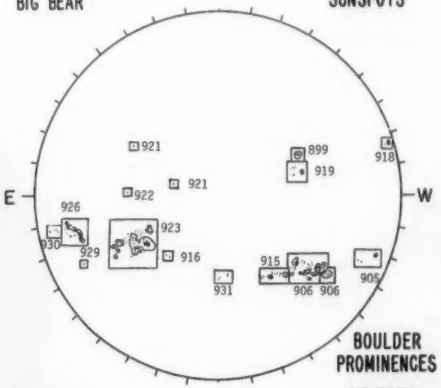
Sp

1344 UT

BIG BEAR

Np

SUNSPOTS



E W

Sp

2000 UT

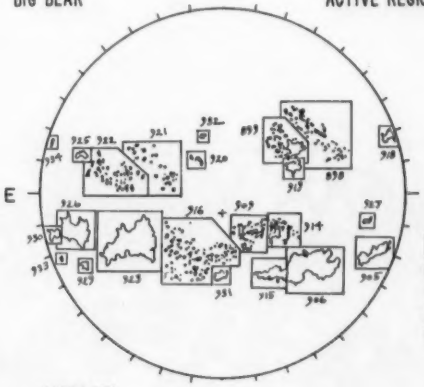
BOULDER PROMINENCES

NO DATA

BIG BEAR

Np

ACTIVE REGIONS



E W

Sp

1427 UT

V	POOR	UM

06- 6400-3.5
15- 1300-3.5
18- 1100-3.5
19- 0600-2.5
23- 7700-3.5
26- 4800-4.0
31- 0400-2.5

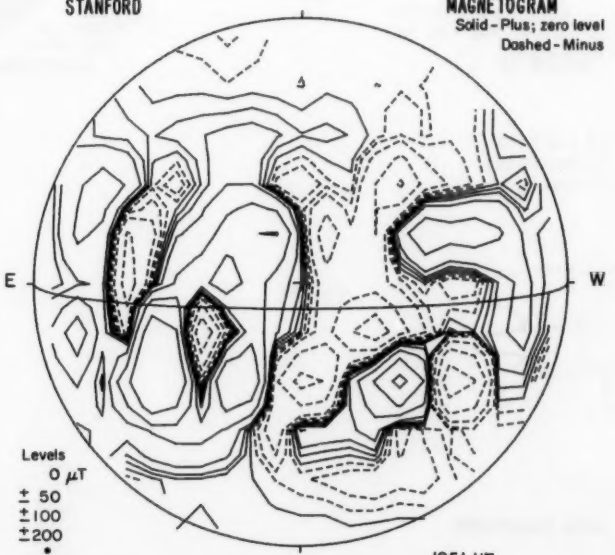
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

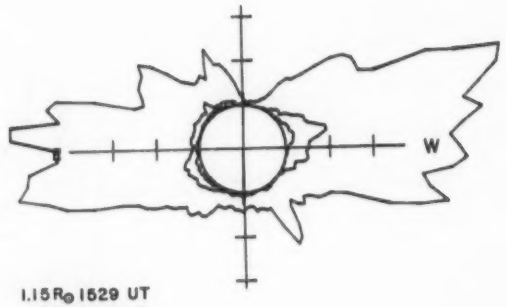
±200

Sp

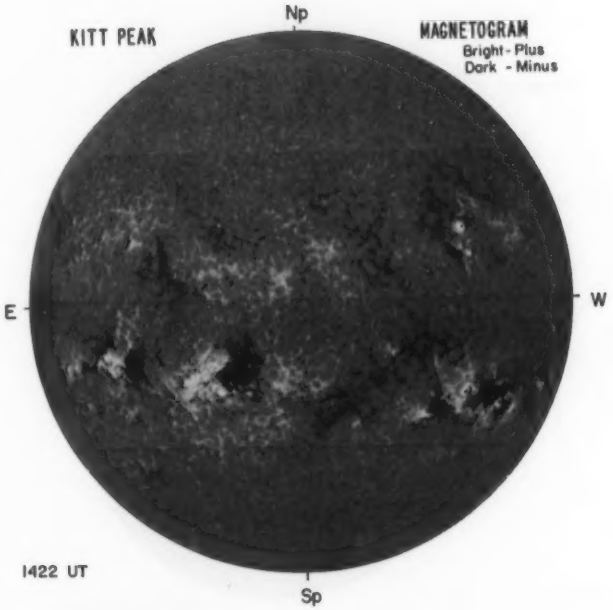
1951 UT

OCTOBER 17, 1981 (P= 26.16, B_o= 5.71, L_o= 298.60)

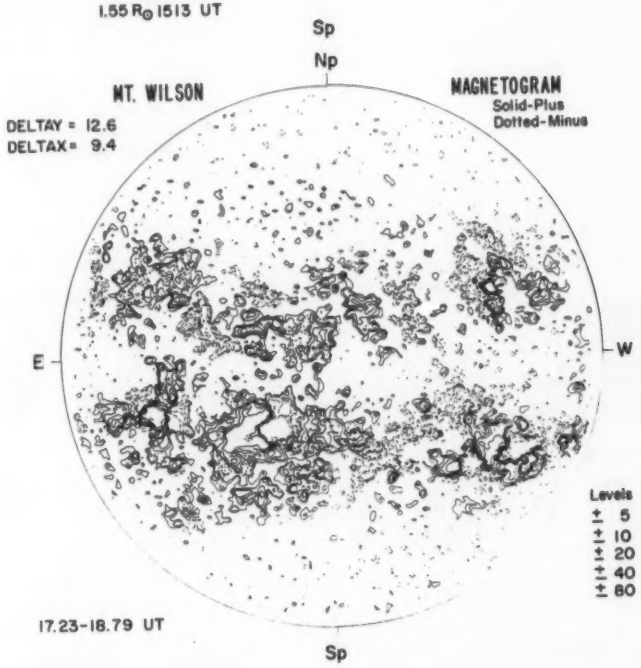
SACRAMENTO PEAK



1.15 $R_\odot$ 1529 UT
1.35 $R_\odot$ 1503 UT
1.55 $R_\odot$ 1513 UT



1422 UT



17.23-18.79 UT

Sp

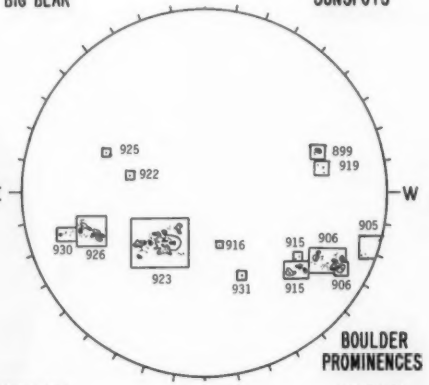
17

SACRAMENTO PEAK Np Hα

E W

1348 UT Sp

BIG BEAR Np SUNSPOTS



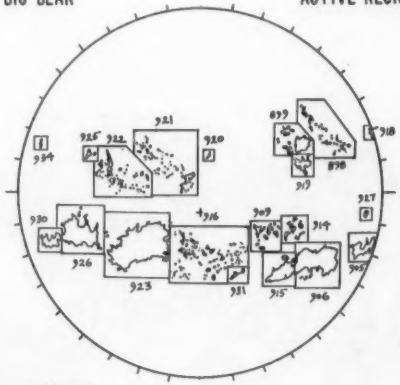
E W

1950 UT Sp

BOULDER PROMINENCES

NO DATA

BIG BEAR Np ACTIVE REGIONS



E W

1422 UT Sp

STANFORD Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E NO DATA W

Levels

0 μT

± 50

±100

±200

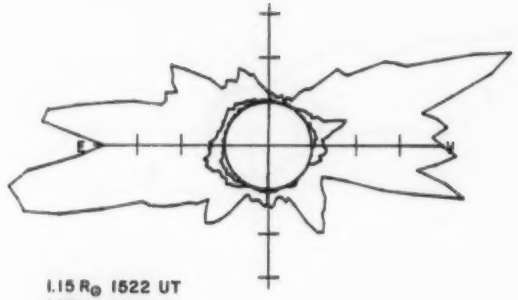
•

•

Sp

OCTOBER 18, 1981 (P= 26.11, B_o= 5.63, L_o= 285.41)

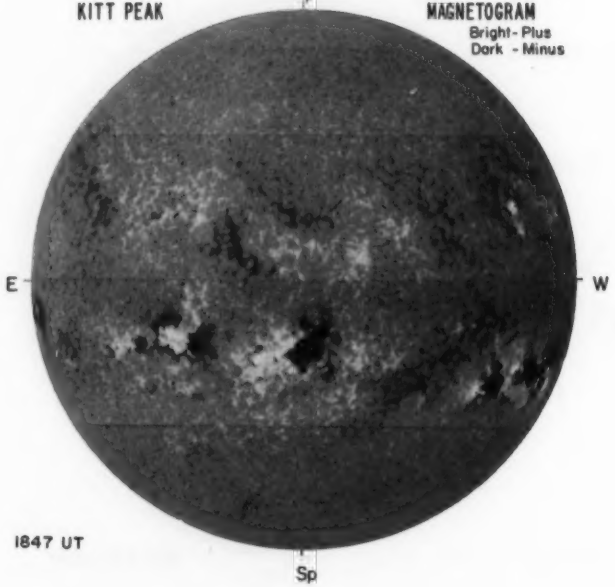
SACRAMENTO PEAK Np CORONA
5303 Å



1.15 $R_\odot$ 1522 UT
1.35 $R_\odot$ 1501 UT
1.55 $R_\odot$ 1510 UT

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



E W

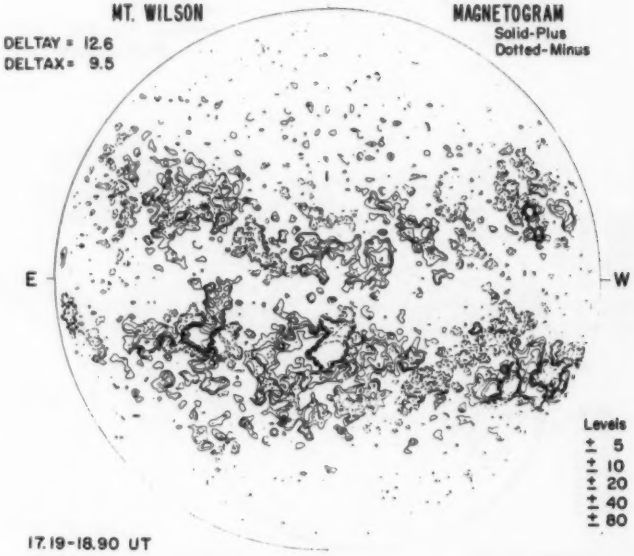
1847 UT

Sp

Np

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.6
DELTAX= 9.5



E W

Levels
± 5
± 10
± 20
± 40
± 80

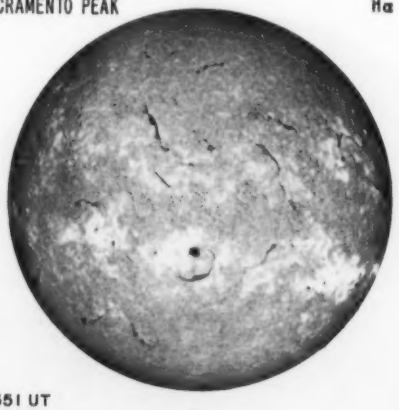
17.19-18.90 UT

Sp

Sp

18

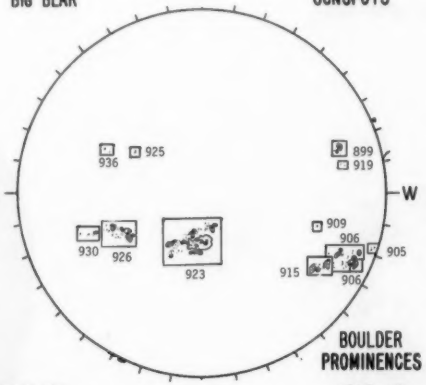
SACRAMENTO PEAK Np Hα



E W

1351 UT Sp

BIG BEAR Np SUNSPOTS



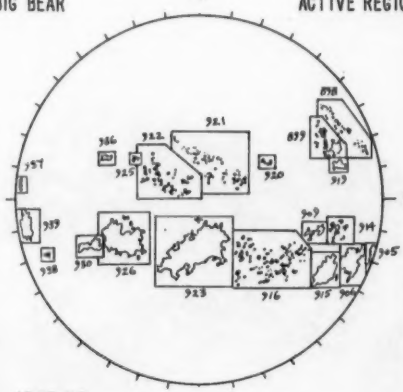
E W

1650 UT Sp

BOULDER PROMINENCES

1515 UT

BIG BEAR Np ACTIVE REGIONS



E W

1847 UT Sp

FAIR	MM
99-	1500-2.5
05-	1500-2.5
06-	5500-3.5
15-	2500-3.5
19-	0500-2.5
23-	7000-4.0
26-	4300-3.5
30-	1200-3.0

STANFORD Np

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

E NO DATA W

Levels
0 μT
± 50
±100
±200
•
•
•

Sp

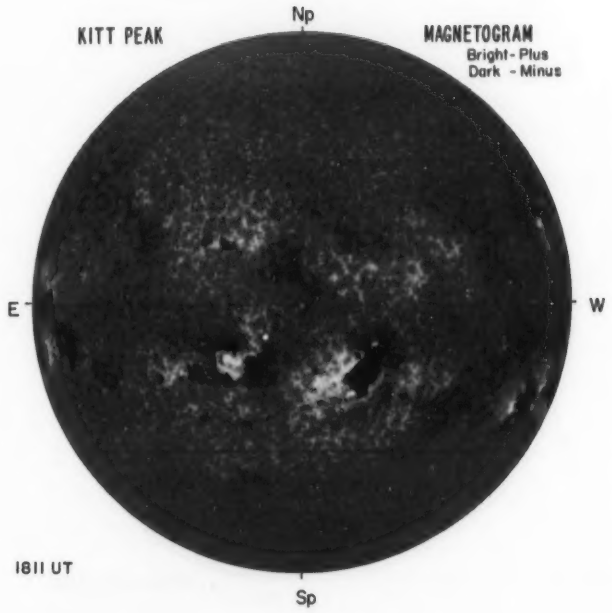
87
Oct 81

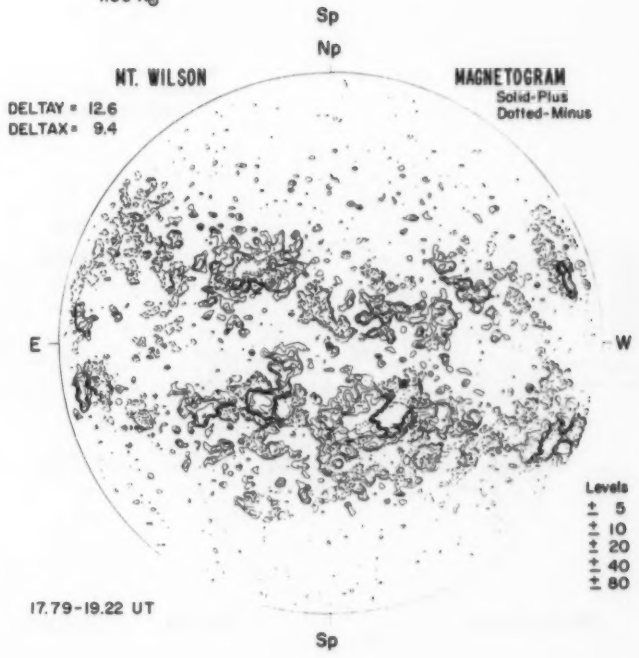
OCTOBER 19, 1981 (P= 26.05, B_o= 5.55, L_o= 272.22)

SACRAMENTO PEAK Np CORONA 5303 Å

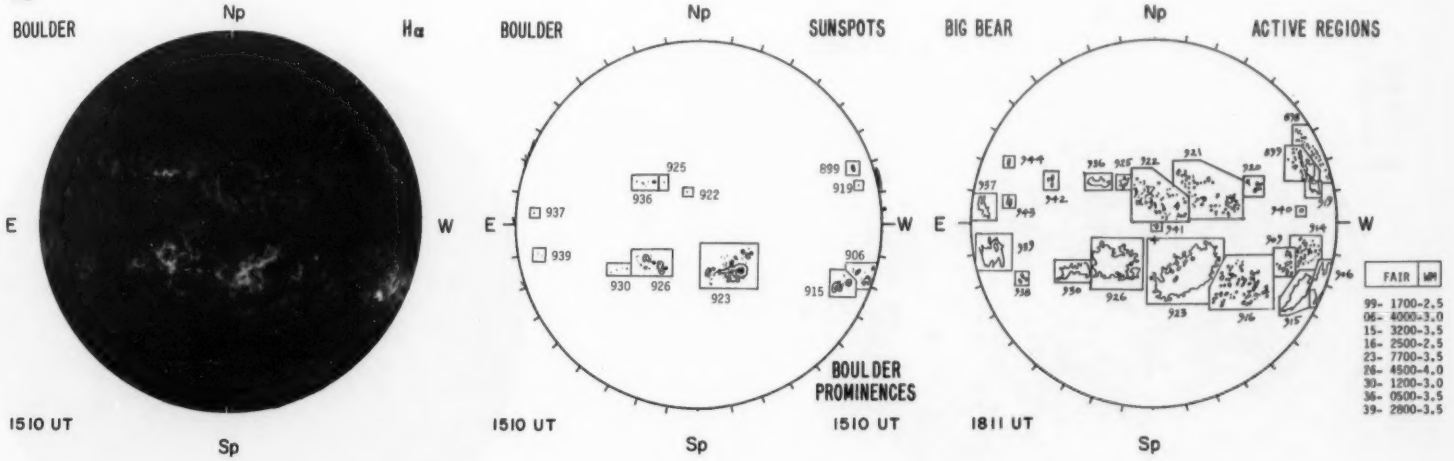
E NO DATA W

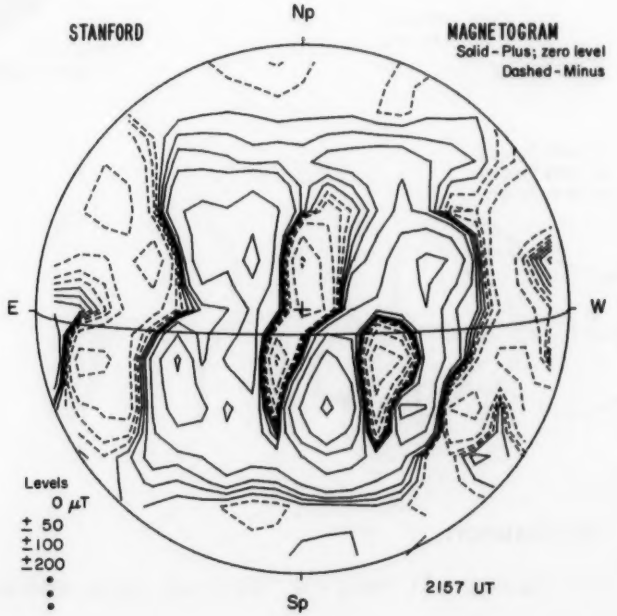
1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$





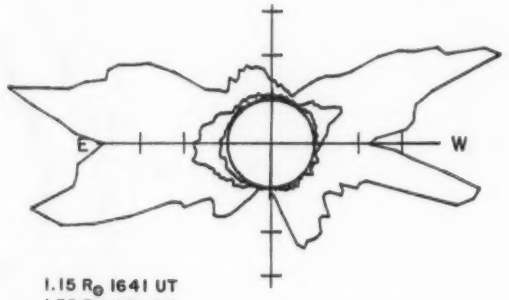
19


BOULDER
Np
Hα
E
W
Sp
1510 UT
BOULDER
Np
SUNSPOTS
925
936
922
899
919
937
939
930
926
923
906
915
E
W
BOULDER
PROMINENCES
1510 UT
Sp
BIG BEAR
Np
ACTIVE REGIONS
E
W
1811 UT
Sp
FAIR
99- 1700-2.5
06- 4000-3.0
15- 3200-3.5
16- 2500-2.5
23- 7700-3.5
26- 4500-4.0
30- 1200-3.0
36- 0500-3.5
39- 2800-3.5


STANFORD
Np
MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus
E
W
Levels
0 μT
± 50
±100
±200
Sp
2157 UT

OCTOBER 20, 1981 (P= 25.98, B_o= 5.46, L_o= 259.03)

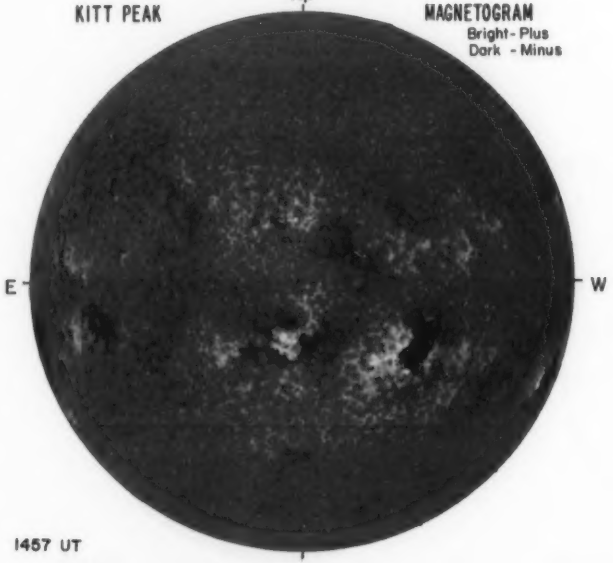
SACRAMENTO PEAK Np CORONA
5303 Å



1.15 $R_\odot$ 1641 UT
1.35 $R_\odot$ 1621 UT
1.55 $R_\odot$ 1630 UT

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



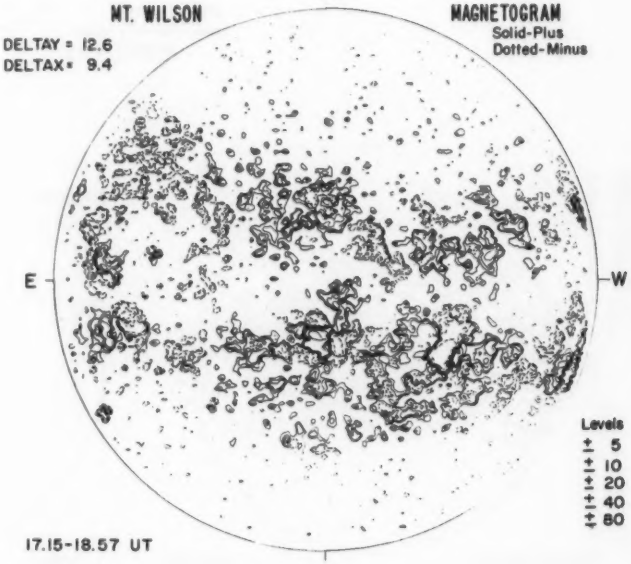
1457 UT

Sp

Np

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4

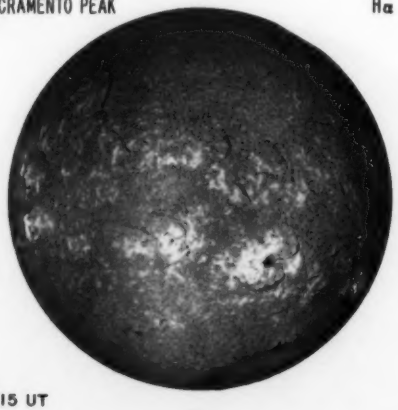


17.15-18.57 UT

Sp

20

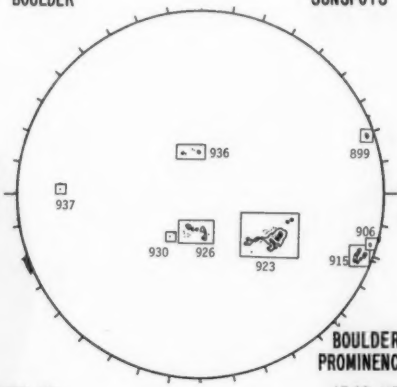
SACRAMENTO PEAK Np Hα



E W

1415 UT Sp

BOULDER Np SUNSPOTS



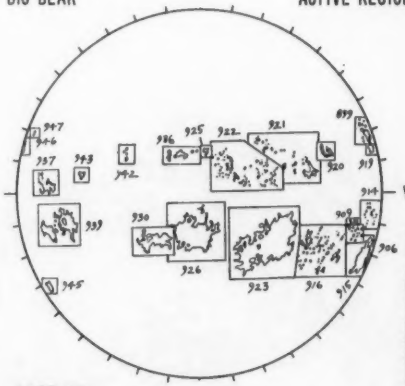
E W

1430 UT Sp

BOULDER PROMINENCES

1549 UT

BIG BEAR Np ACTIVE REGIONS



E W

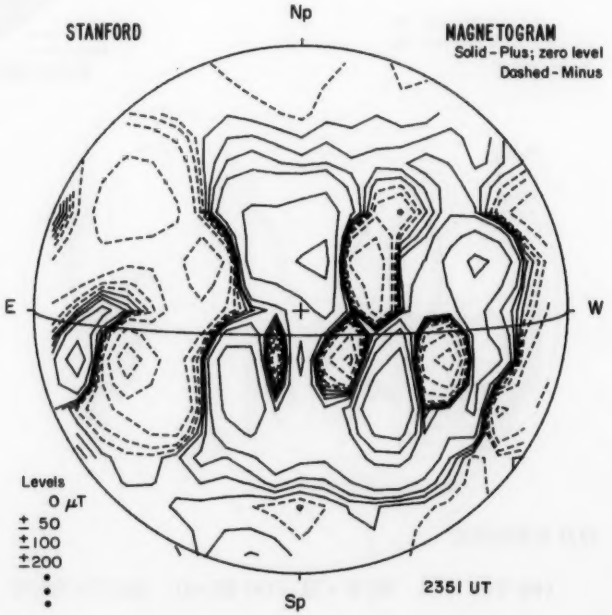
1457 UT Sp

GOOD	MM
99-	1400-2.5
06-	0800-3.0
15-	3300-3.5
16-	2000-2.5
23-	8000-4.0
26-	4200-3.5
30-	1400-2.5
36-	0400-3.0
39-	2500-2.5
45-	0500-3.0
46-	0500-3.5

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

2351 UT Sp

Oct 81

91

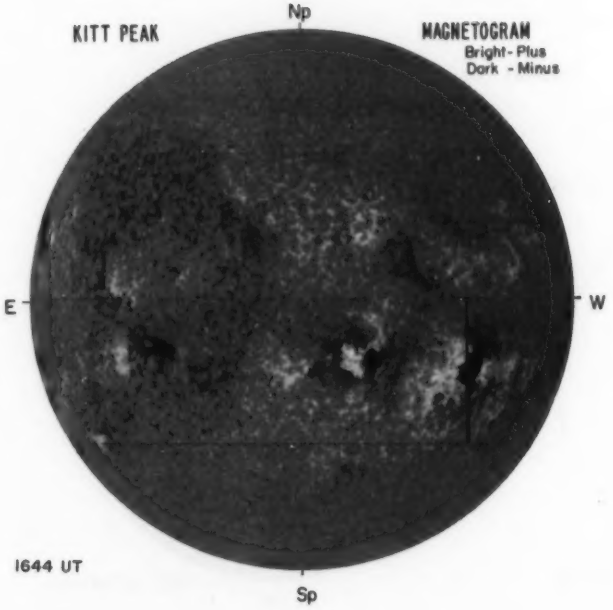
OCTOBER 21, 1981 (P= 25.90, B_o= 5.38, L_o= 245.84)

SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

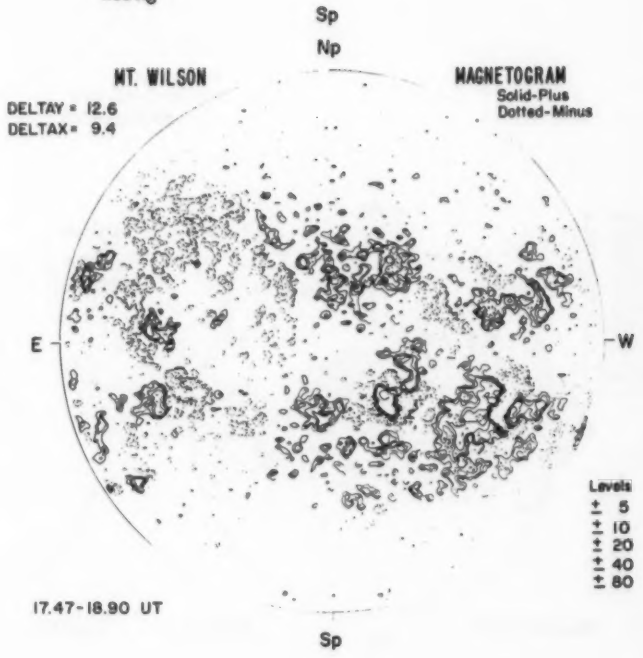
KITT PEAK



MAGNETOGRAM
Bright - Plus
Dark - Minus

1644 UT

MT. WILSON



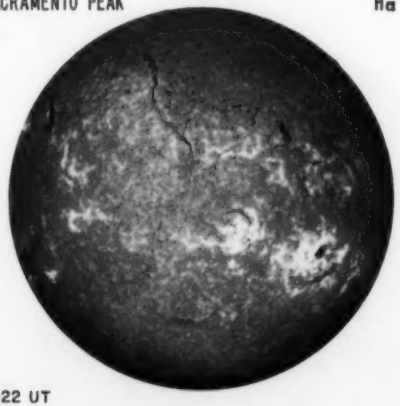
DELTAY = 12.6
DELTAX = 9.4

MAGNETOGRAM
Solid-Plus
Dotted-Minus

Levels
± 5
± 10
± 20
± 40
± 80

17.47-18.90 UT

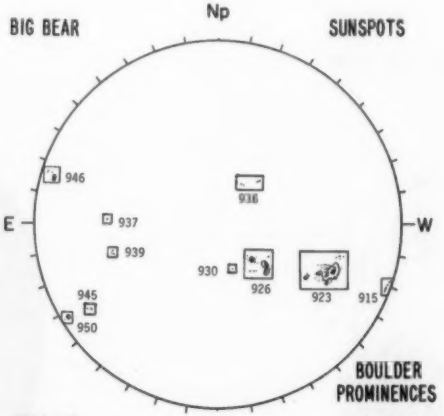
SACRAMENTO PEAK



Hα

1922 UT

BIG BEAR SUNSPOTS

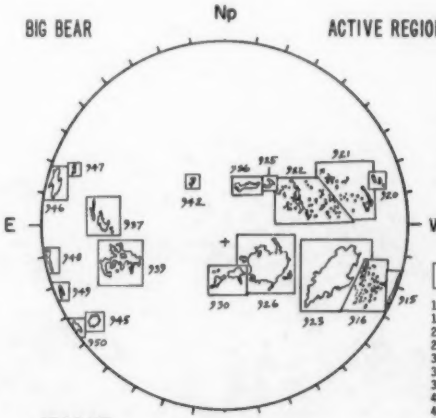


1700 UT

BOULDER PROMINENCES

NO DATA

BIG BEAR ACTIVE REGIONS



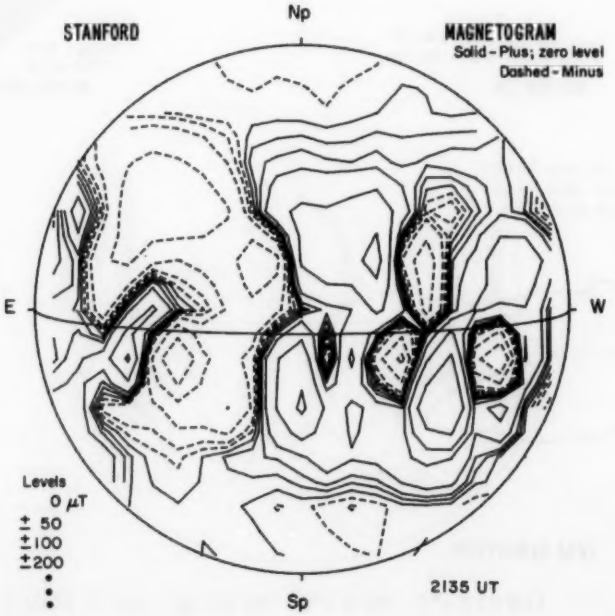
FAIR | WM

15- 1200-3.5
16- 1400-2.5
23- 8200-3.5
26- 4600-3.5
36- 0500-2.5
37- 0900-2.5
39- 3200-2.5
45- 0800-3.5
46- 2400-3.5
47- 0100-2.5

1644 UT

STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

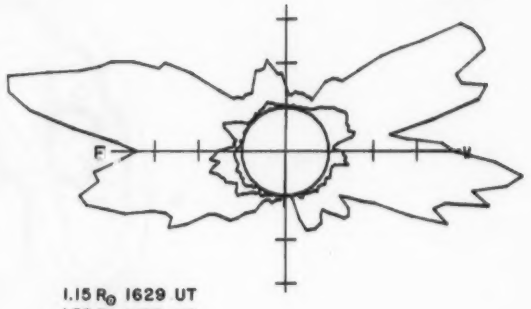


2135 UT

93
Oct 81

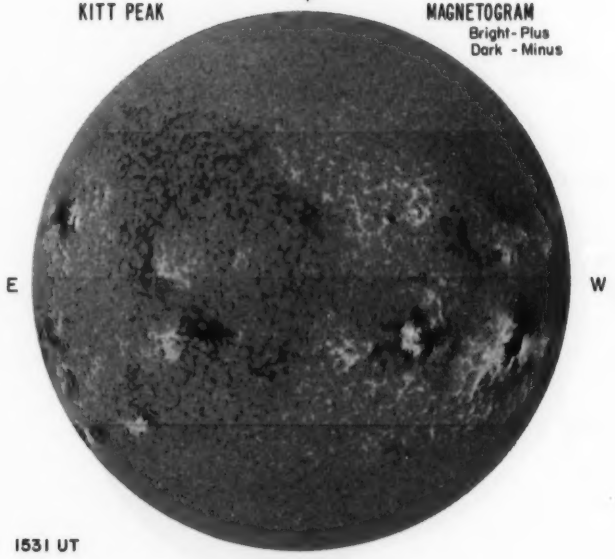
OCTOBER 22, 1981 (P=25.82, B_o= 5.30, L_o= 232.65)

SACRAMENTO PEAK Np CORONA 5303 Å



1.15 $R_\odot$ 1629 UT
1.35 $R_\odot$ 1637 UT
1.55 $R_\odot$ 1647 UT

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark - Minus



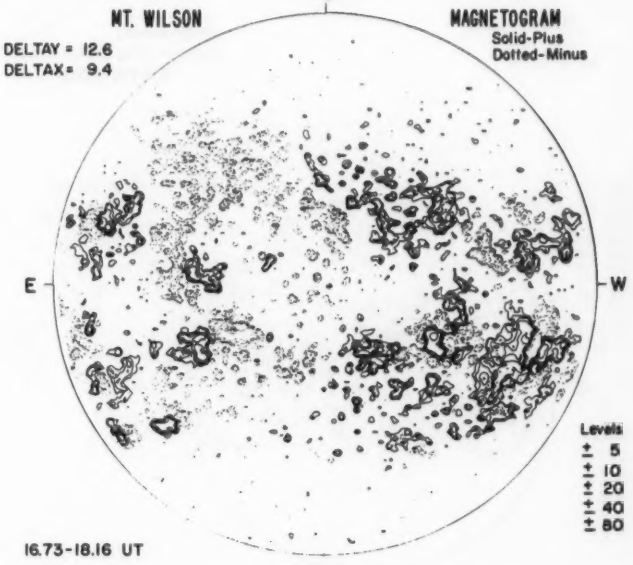
1531 UT

Sp

Sp Np

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4

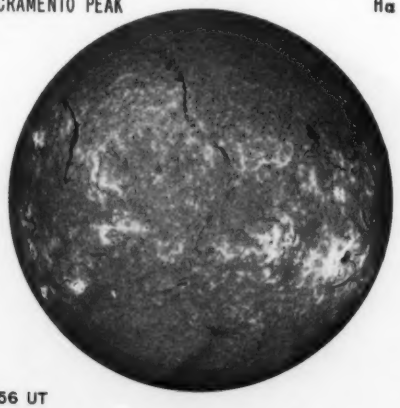


16.73-18.16 UT

Sp

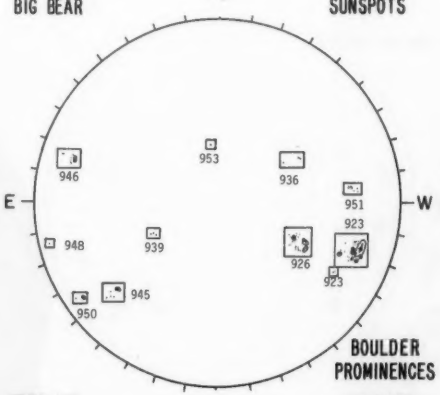
SACRAMENTO PEAK Np

SACRAMENTO PEAK Hα



1556 UT

BIG BEAR SUNSPOTS

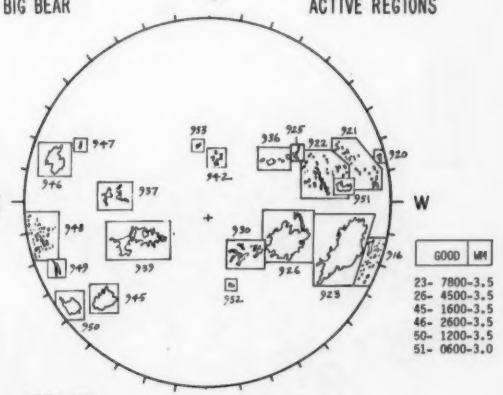


1730 UT

BOULDER PROMINENCES

NO DATA

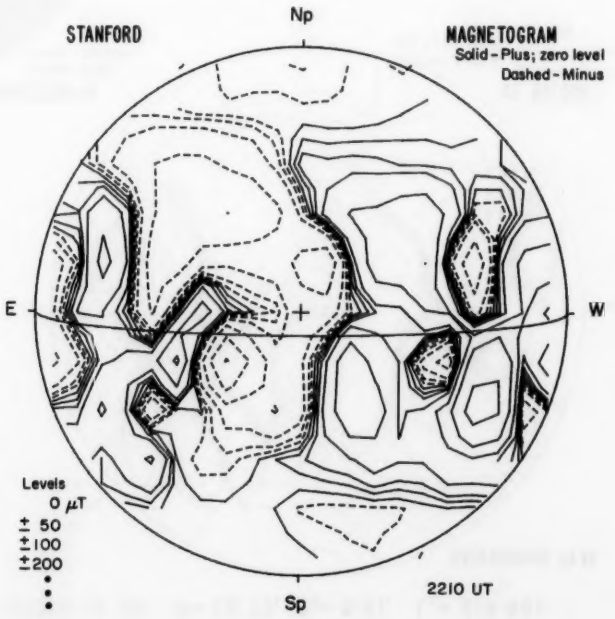
BIG BEAR ACTIVE REGIONS



1531 UT

STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



2210 UT

95
Oct 81

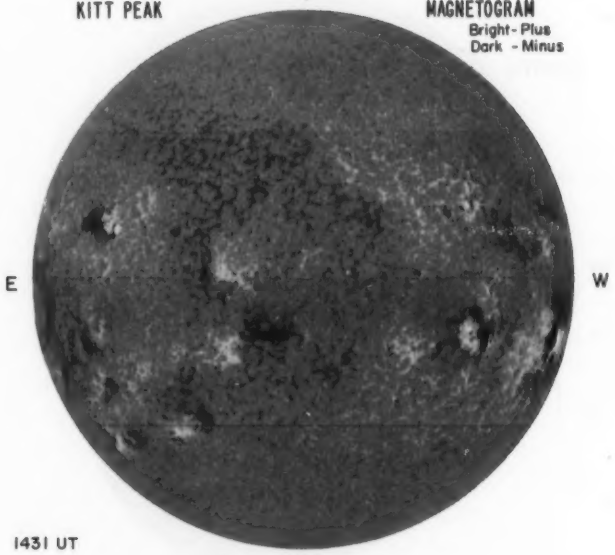
OCTOBER 23, 1981 (P= 25.73, B_o= 5.21, L_o= 219.46)

SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

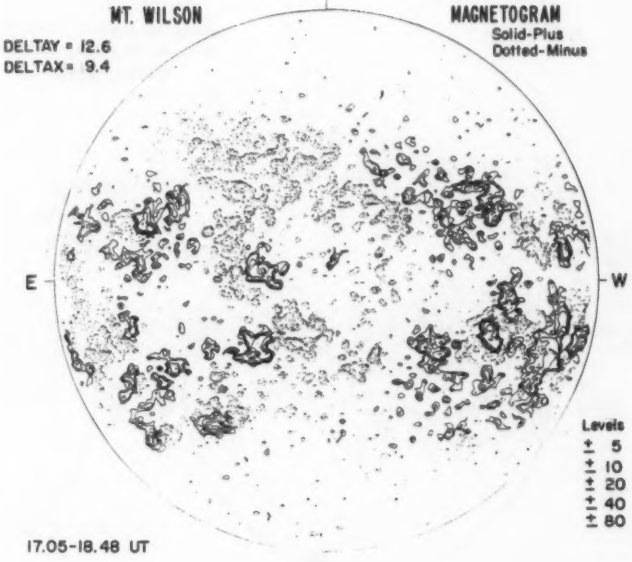
KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus



1431 UT

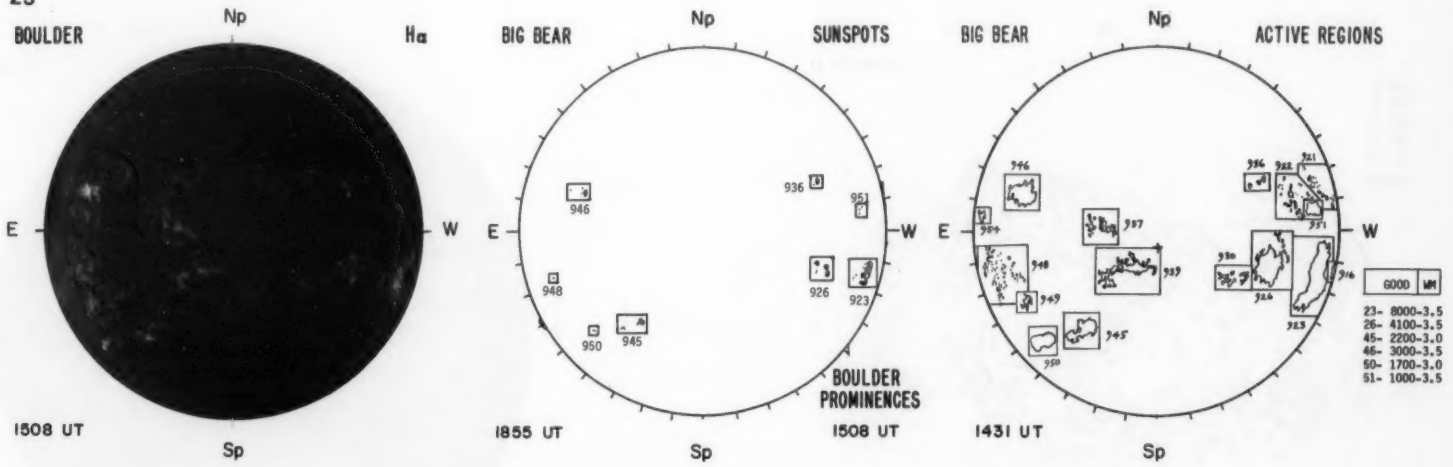
Sp Np MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

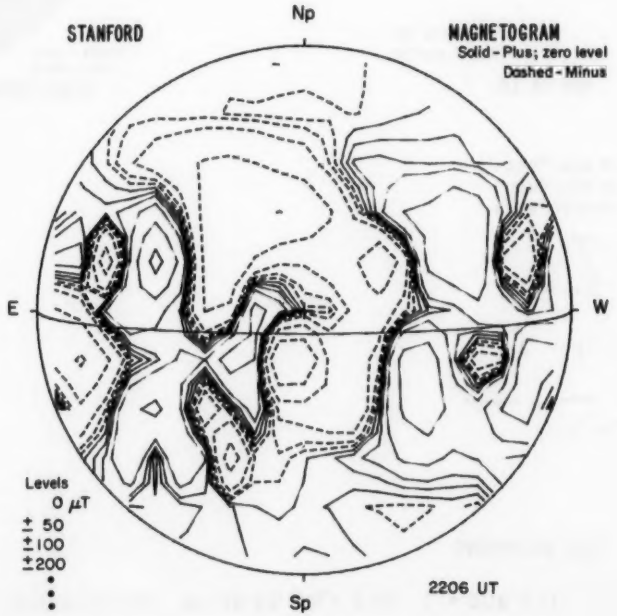
DELTAY = 12.6
DELTAX= 9.4



17.05-18.48 UT

23

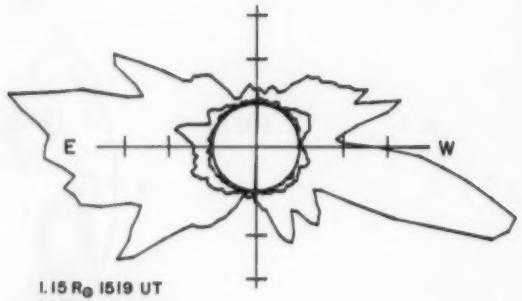

BOULDER
Np
Hα
E
W
Sp
1508 UT
BIG BEAR
SUNSPOTS
946
936
951
948
926
923
950
945
BOULDER
PROMINENCES
1855 UT
1508 UT
BIG BEAR
ACTIVE REGIONS
1431 UT
6000 MH
23- 8000-3.5
26- 4100-3.5
45- 2200-3.0
46- 3000-3.5
50- 1700-3.0
51- 1000-3.5


STANFORD
Np
MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus
E
W
Sp
2206 UT
Levels
0 μT
± 50
±100
±200

97
Oct 81

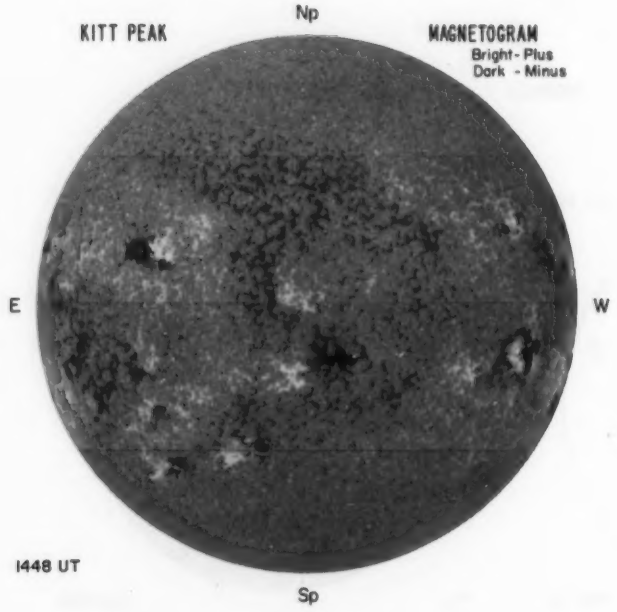
OCTOBER 24, 1981 (P= 25.63, B_o= 5.12, L_o= 206.27)

SACRAMENTO PEAK



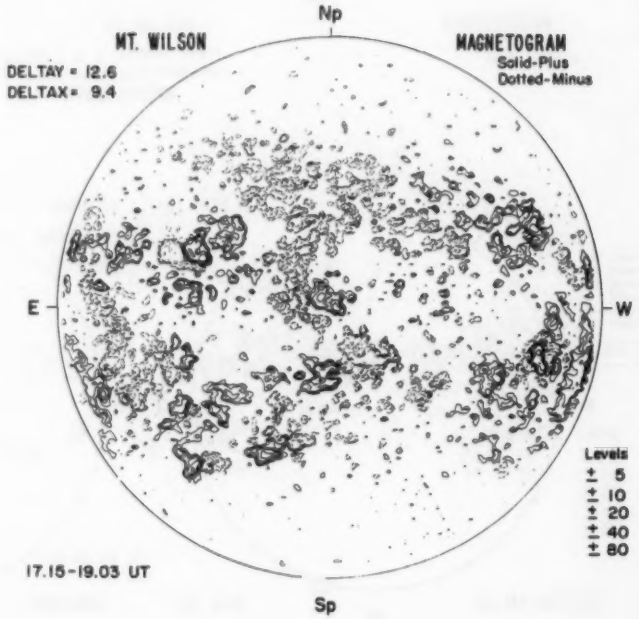
1.15 $R_\odot$ 1519 UT
1.35 $R_\odot$ 1459 UT
1.55 $R_\odot$ 1509 UT

KITT PEAK



1448 UT

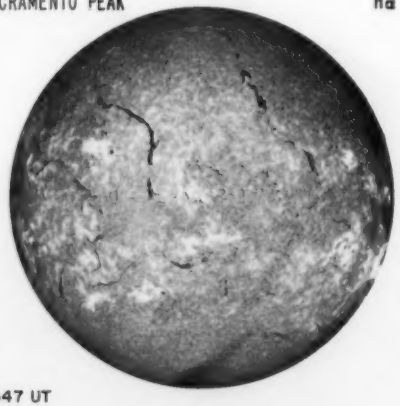
MT. WILSON



17.15-19.03 UT

24

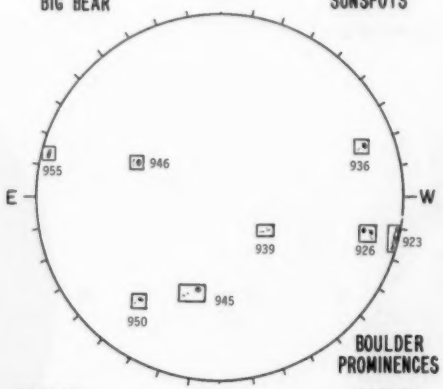
SACRAMENTO PEAK Np Hα



E W

1547 UT Sp

BIG BEAR Np SUNSPOTS



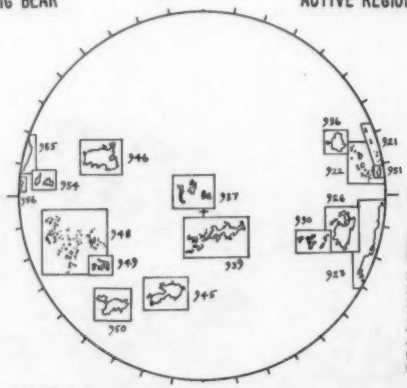
E W

2050 UT Sp

BOULDER PROMINENCES

NO DATA

BIG BEAR Np ACTIVE REGIONS



E W

1448 UT Sp

G000	WM
23-	8500-3.5
26-	3500-2.5
36-	0600-2.5
39-	2000-2.5
45-	2000-2.5
46-	3000-3.0
50-	1700-3.0
55-	1800-2.5

STANFORD Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E NO DATA W

Levels

0 μT

± 50

±100

±200

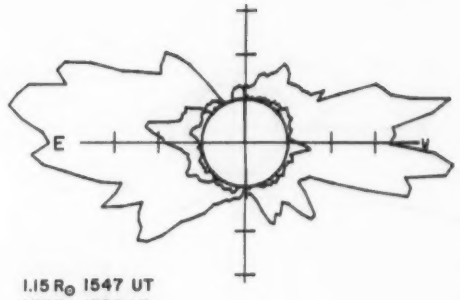
Sp

OCTOBER 25, 1981 (P= 25.52, B_o= 5.03, L_o= 193.08)

SACRAMENTO PEAK

Np

CORONA
5303 Å



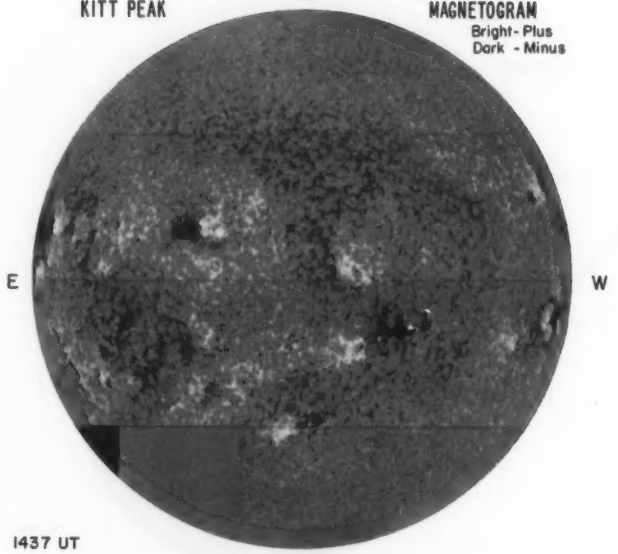
1.15 $R_\odot$ 1547 UT
1.35 $R_\odot$ 1526 UT
1.55 $R_\odot$ 1536 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright-Plus
Dark - Minus



1437 UT

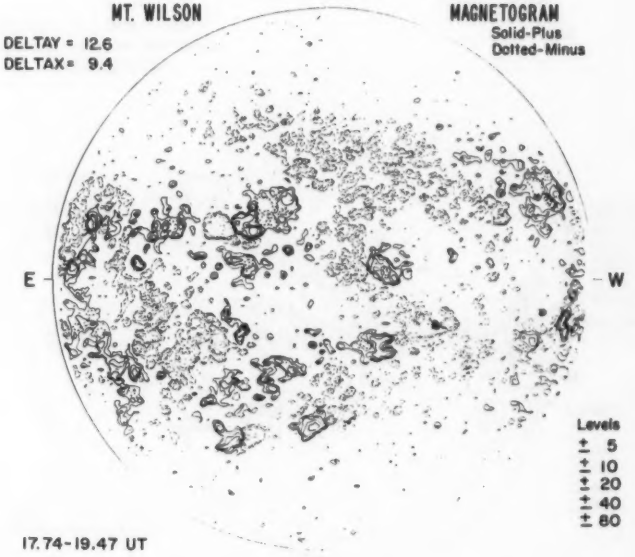
Sp

MT. WILSON

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4



17.74-19.47 UT

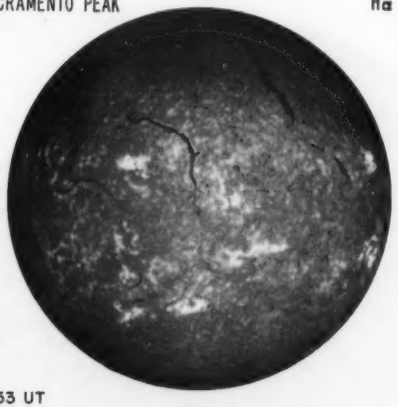
Sp

25

Np

SACRAMENTO PEAK

Hα



E W

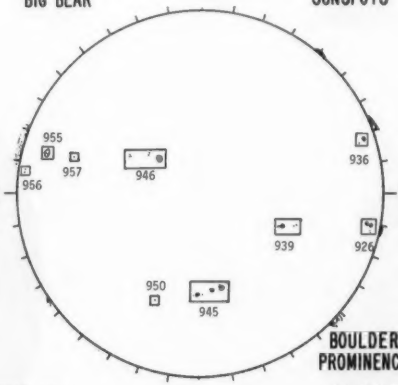
1353 UT

Sp

Np

BIG BEAR

SUNSPOTS



E W E

2150 UT

Sp

BOULDER PROMINENCES

1625 UT

Np

BIG BEAR

NO DATA

E W

Sp

Np

STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

•

••

•

Sp

Np

ACTIVE REGIONS

NO DATA

W

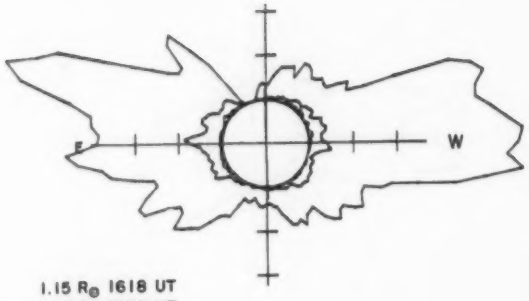
Sp

OCTOBER 26, 1981 (P= 25.40, B_o= 4.94, L_o= 179.90)

SACRAMENTO PEAK

Np

CORONA
5303 Å



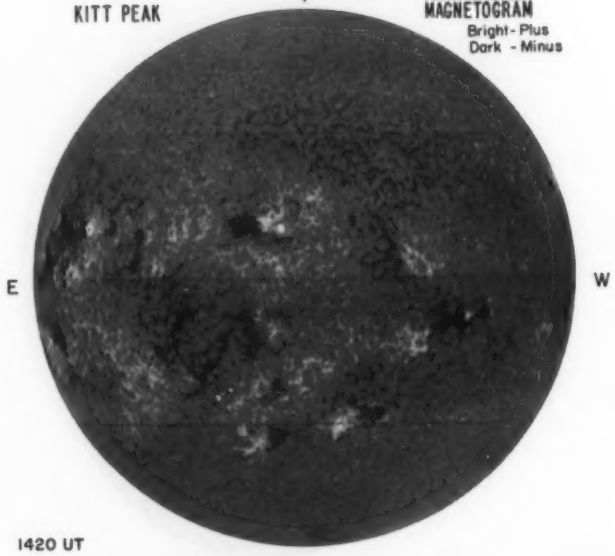
1.15 $R_\odot$ 1618 UT
1.35 $R_\odot$ 1552 UT
1.55 $R_\odot$ 1603 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus



1420 UT

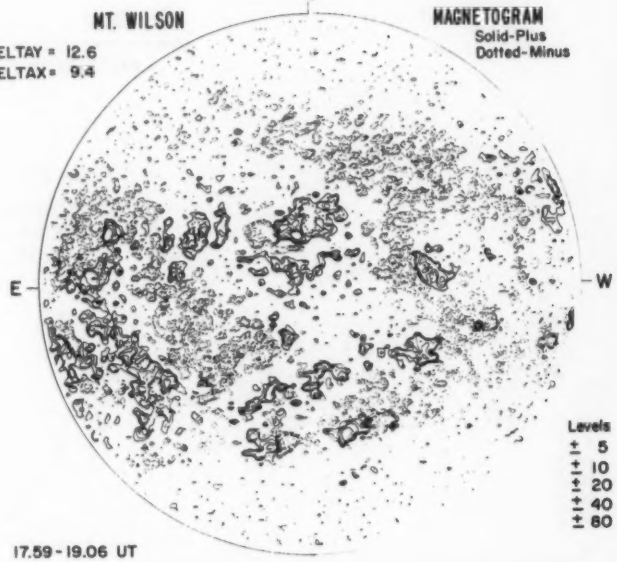
Sp

MT. WILSON

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.6
DELTAX= 9.4



17.59 - 19.06 UT

Sp

Sp

26

SACRAMENTO PEAK

Np

Hα

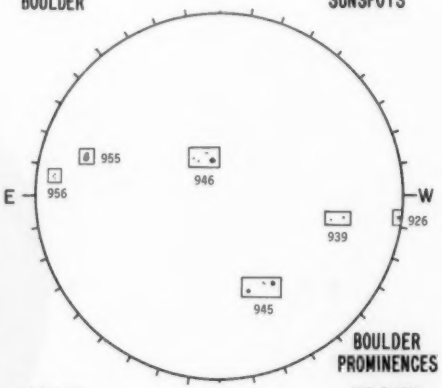
E W

1359 UT

Sp

BOULDER

Np



E W

1600 UT

Sp

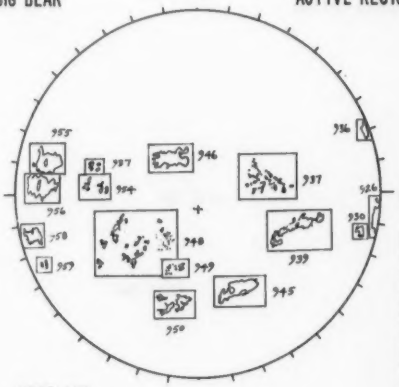
SUNSPOTS

BOULDER PROMINENCES

NO DATA

BIG BEAR

Np



E W

1420 UT

Sp

ACTIVE REGIONS

GOOD	MM
26-	2500-2.5
36-	1000-3.0
45-	2000-2.5
46-	2400-3.0
50-	1300-2.5
55-	2800-3.0
56-	1800-2.5
57-	0200-2.5
58-	1300-3.0

STANFORD

Np

Sp

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

OCTOBER 27, 1981 (P= 25.28, B_o= 4.85, L_o= 166.71)

SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

KITT PEAK MAGNETOGRAM Bright - Plus Dark - Minus

E W

1440 UT

Sp

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

Levels
± 5
± 10
± 20
± 40
± 80

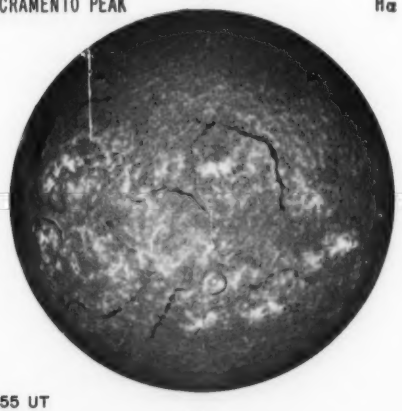
Sp

27

Np

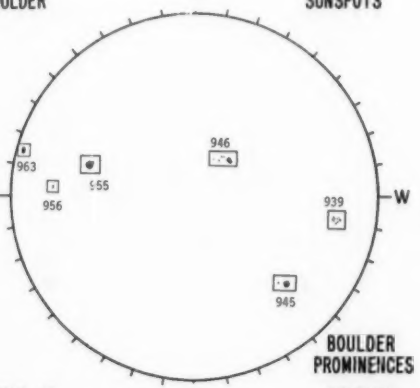
27

SACRAMENTO PEAK Hα



1355 UT

BOULDER SUNSPOTS



2010 UT

BOULDER PROMINENCES

NO DATA

BIG BEAR ACTIVE REGIONS

NO DATA

STANFORD

MAGNETOGRAM

Solid - Plus; zero level

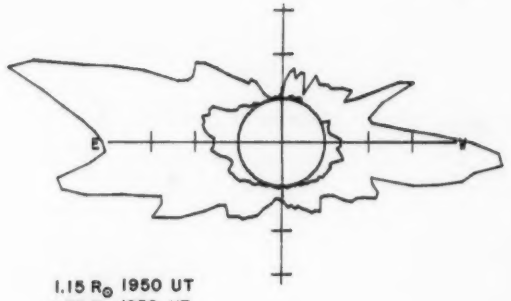
Dashed - Minus

105

Oct 81

OCTOBER 28, 1981 (P= 25.15, B_o= 4.75, L_o= 153.52)

SACRAMENTO PEAK Np CORONA 5303 Å



1.15 $R_\odot$ 1950 UT
1.35 $R_\odot$ 1958 UT
1.55 $R_\odot$ ----

Sp

Np

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

MT. WILSON

DELTAY =
DELTAX=

MAGNETOGRAM
Solid-Plus
Dotted-Minus

E NO DATA W

E NO DATA W

Levels
+ 5
+ + 10
+ + 20
+ + 40
+ + 80

Sp

Sp

Sp

28

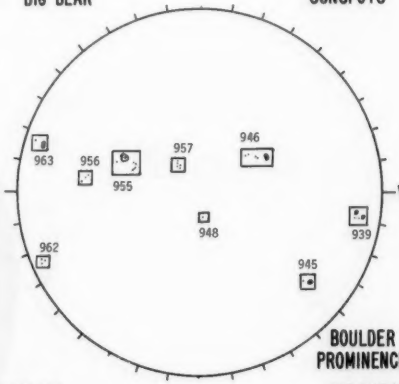
SACRAMENTO PEAK Np Hα

E W

1949 UT

Sp

BIG BEAR Np SUNSPOTS



E W E

1545 UT

Sp

BIG BEAR Np ACTIVE REGIONS

NO DATA

W

BOULDER PROMINENCES

NO DATA

Sp

STANFORD Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E NO DATA W

Levels

0 μT

± 50

±100

±200

•

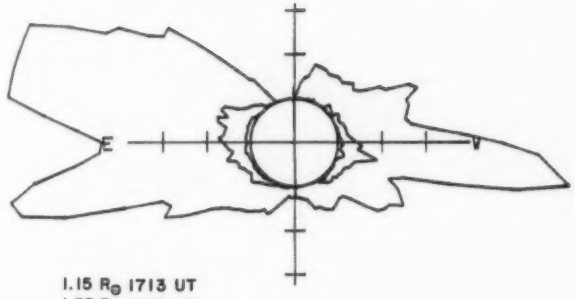
•

•

Sp

OCTOBER 29, 1981 (P= 25.01, B_o= 4.66, L_o= 140.34)

SACRAMENTO PEAK Np CORONA 5303 Å



1.15 $R_\odot$ 1713 UT
1.35 $R_\odot$ 1722 UT
1.55 $R_\odot$ 1731 UT

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

1639 UT

Sp

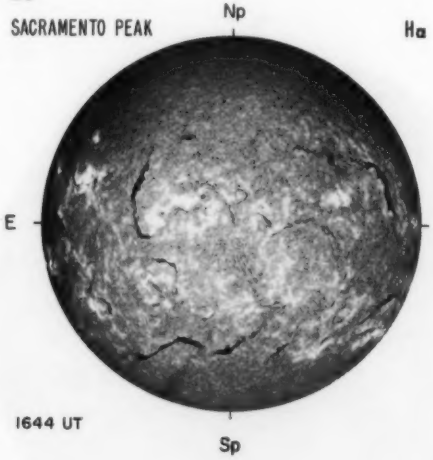
MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

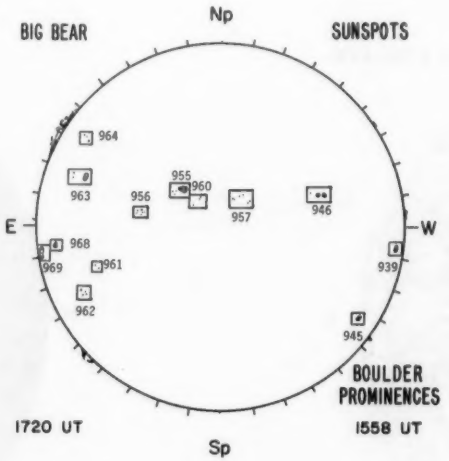
DELTAY =
DELTAX =

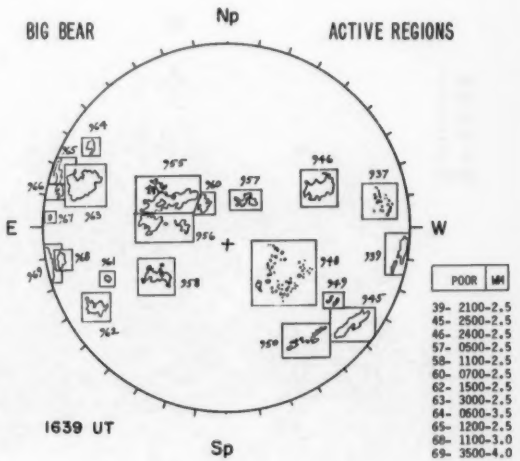
E NO DATA W

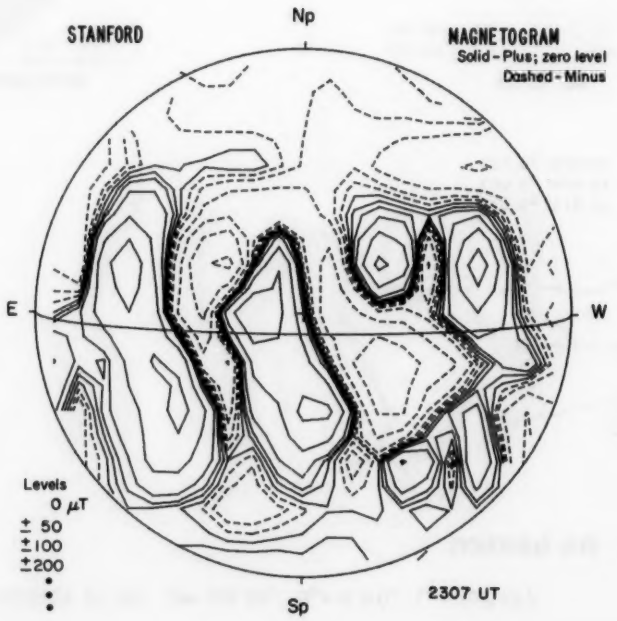
Levels
± 5
± 10
± 20
± 40
± 80

Sp


SACRAMENTO PEAK
Np
Hα
E
W
Sp
1644 UT


BIG BEAR
Np
SUNSPOTS
964
963
955
960
956
957
946
968
969
961
939
962
945
E
W
Sp
1720 UT
BOULDER
PROMINENCES
1558 UT


BIG BEAR
Np
ACTIVE REGIONS
E
W
Sp
1639 UT
POOR
39- 2100-2.5
45- 2500-2.5
46- 2400-2.5
57- 0500-2.5
58- 1100-2.5
60- 0700-2.5
62- 1500-2.5
63- 3000-2.5
64- 0600-3.5
65- 1200-2.5
68- 1100-3.0
69- 3500-4.0

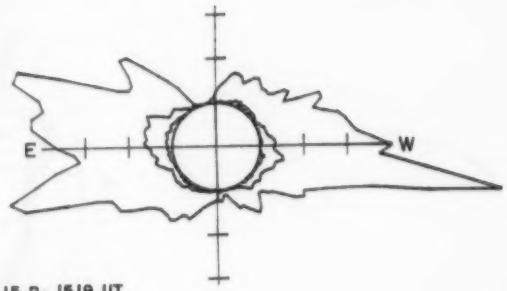

STANFORD
Np
MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus
E
W
Levels
0 μT
± 50
±100
±200
Sp
2307 UT

OCTOBER 30, 1981 (P= 24.86, B_o= 4.56, L_o= 127.15)

SACRAMENTO PEAK

Np

CORONA
5303 Å



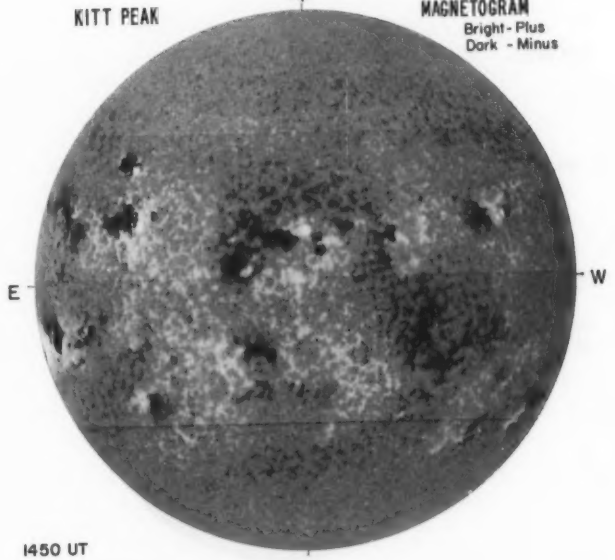
1.15 $R_\odot$ 1519 UT
1.35 $R_\odot$ 1459 UT
1.55 $R_\odot$ 1509 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus



1450 UT

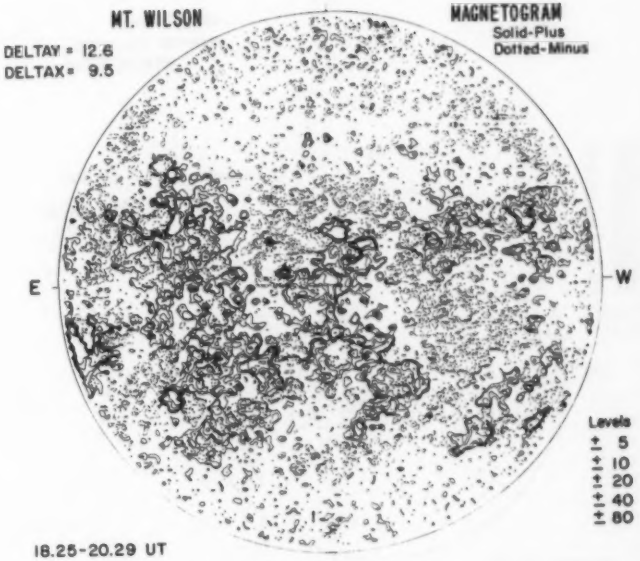
Sp

MT. WILSON

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

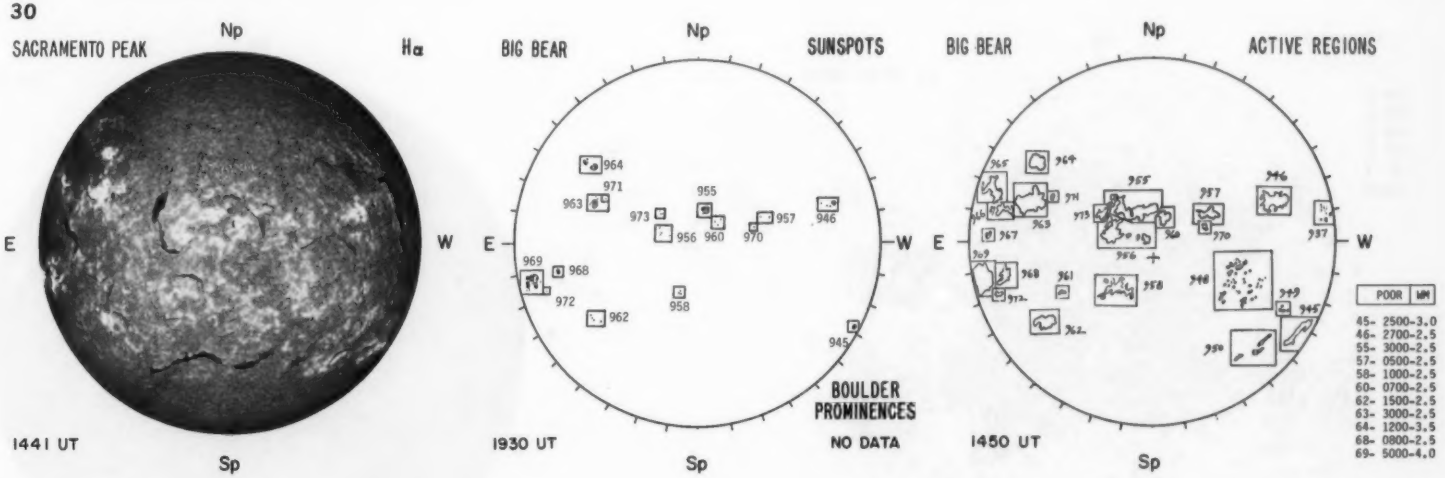
DELTAY = 12.6
DELTAX= 9.5

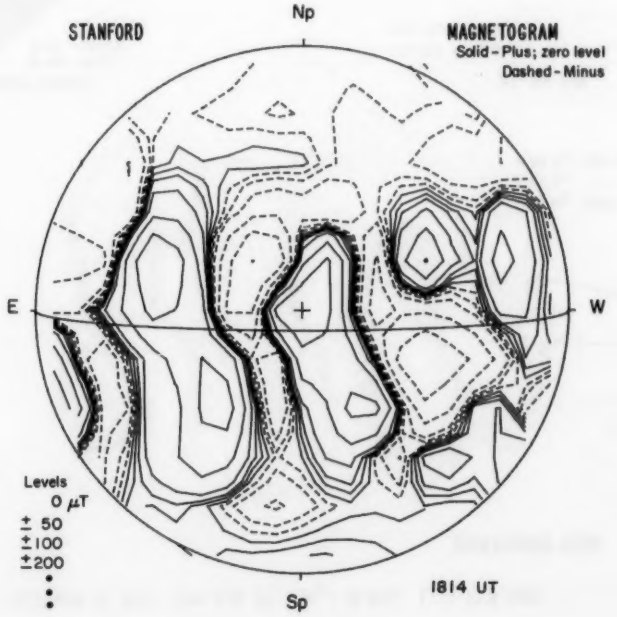


18.25-20.29 UT

Sp

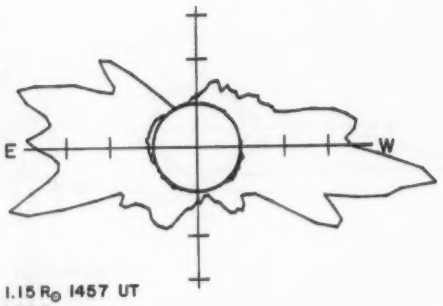
30


SACRAMENTO PEAK
Np
Hα
1441 UT
E
W
Sp
BIG BEAR
SUNSPOTS
1930 UT
NO DATA
964
971
963
973
955
956
960
957
970
946
969
968
972
962
958
945
BOULDER
PROMINENCES
BIG BEAR
ACTIVE REGIONS
1450 UT
POOR
45- 2500-3.0
46- 2700-2.5
55- 3000-2.5
57- 0500-2.5
58- 1000-2.5
60- 0700-2.5
62- 1500-2.5
63- 3000-2.5
64- 1200-3.5
68- 0800-2.5
69- 5000-4.0


STANFORD
Np
MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus
E
W
Levels
0 μT
± 50
±100
±200
Sp
1814 UT

OCTOBER 31, 1981 (P= 24.71, B_o= 4.46, L_o= 113.96)

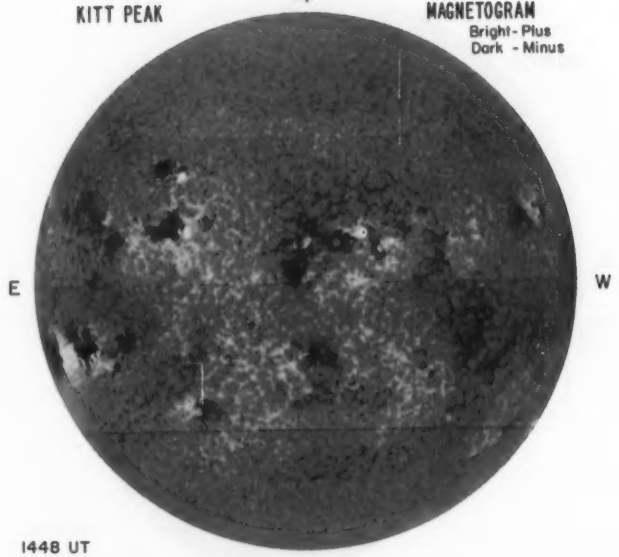
SACRAMENTO PEAK Np CORONA 5303 Å



1.15 $R_\odot$ 1457 UT
1.35 $R_\odot$ ----
1.55 $R_\odot$ 1551 UT

Sp

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark - Minus



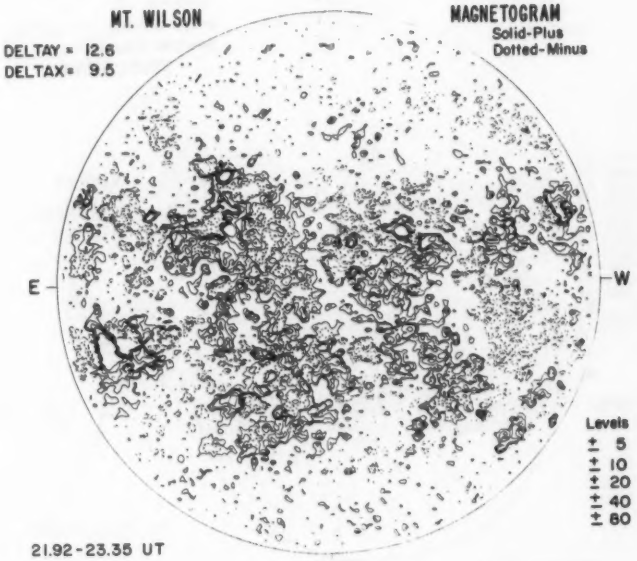
1448 UT

Sp

Np

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.5

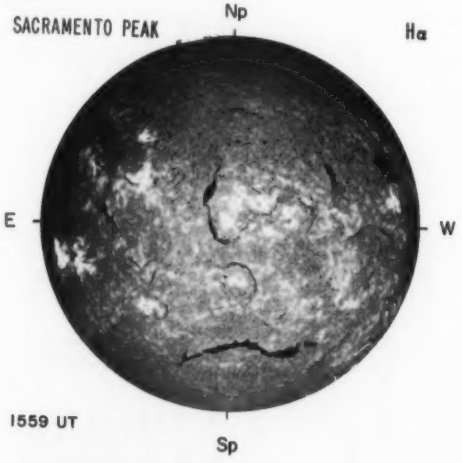


21.92-23.35 UT

Sp

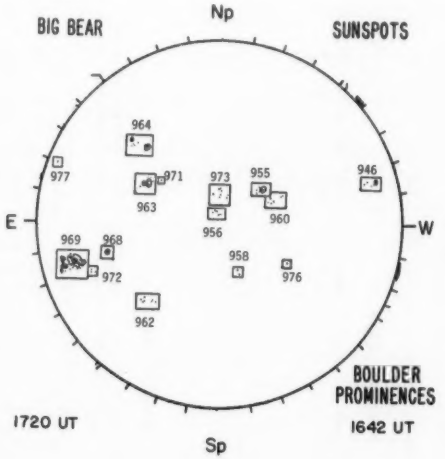
31

SACRAMENTO PEAK Hα



1559 UT

BIG BEAR SUNSPOTS

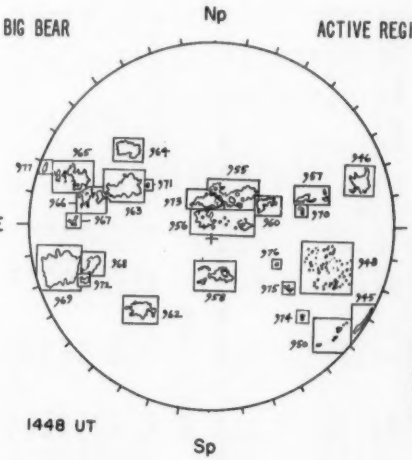


1720 UT

BOULDER PROMINENCES

1642 UT

BIG BEAR ACTIVE REGIONS

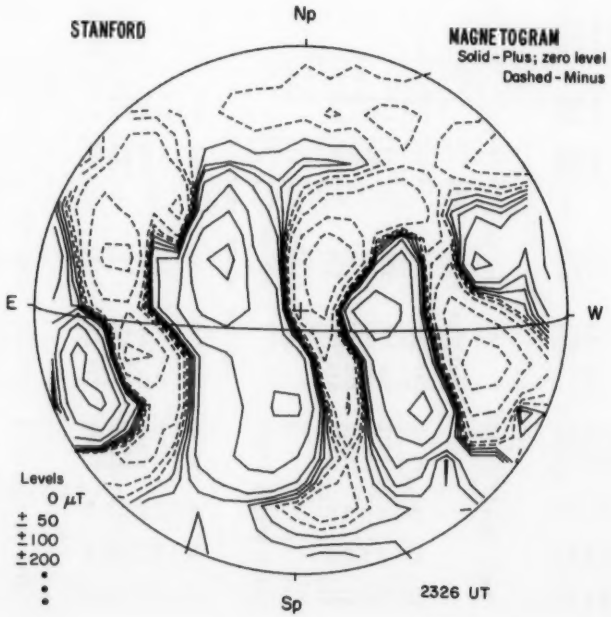


1448 UT

FAIR	WN
45-	1500-3.0
46-	2500-3.0
55-	2600-2.5
62-	1500-3.0
93-	2800-3.0
64-	1500-3.0
65-	2500-2.5
69-	7200-4.0
72-	0300-3.0

STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



2326 UT

REGIONS OF SOLAR ACTIVITY

OCTOBER 1981

HALE REGION 17880 CMP DATE 1.6 RETURN OF REGION 17820 ROTATION 2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	3	17880				N16 W32					H	20	1	HAX			
81	10	4	17880						22647	N13	W45	147	X	1	H		1	AXX
81	10	5	17880	N17	W56	141	600	2.5		N17	W50				L		1	AXX
81	10	6	17880	N17	W67	143	500	2.5										
81	10	7	17880	N18	W80	142	300	2.0										

HALE REGION 17875 CMP DATE 1.7 NEW & LEADING PORTION OF REGION 17824 ROTATION 3

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	09	30	17875	S12	E10	144	900	3.5	22641	S10	E06	148	X	2	P	20	6	BXO
81	10	3	17875							S16	W26				H	20	6	BXO
81	10	4	17875						22646	S07	W47	149	(AP)	3	H	20	2	AXX
81	10	4	17875						22649	S15	W40	142	(BP)	4	H	30	5	CRO
81	10	5	17875	S13	W55	140	3200	3.0	22649	S15	W55	143	(B)	4	B	50	7	CAI
81	10	6	17875	S13	W65	141	2500	2.0	22649	S15	W66	141	(B)	3	B	60	1	CRO
81	10	7	17875	S13	W77	139	2800	2.0	22649	S16	W75	137	AF	1	H	70	1	HSX

HALE REGION 17872 CMP DATE 1.9

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	09	26	17872	S28	E68	138	300	3.0										
81	09	27	17872	S28	E50	142	300	3.0										
81	09	28	17872	S28	E44	135	500	3.0										
81	09	30	17872	S28	E16	138	500	3.0										

HALE REGION 17869 CMP DATE 2.2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	09	25	17869	S12	E78	142	400	3.0										
81	09	26	17869	S13	E63	143	1000	3.5										
81	09	27	17869	S13	E52	140	2600	3.0										
81	09	28	17869	S12	E39	140	3000	3.0										
81	09	30	17869	S10	E20	134	2300	3.5	22642	S10	E17	137	X	2	P	20	6	BXO

HALE REGION 17894 CMP DATE 2.2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	6	17894	N25	W58	134	200	2.0										

HALE REGION 17868 CMP DATE 2.3

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	09	25	17868	N15	E78	142	200	3.0	22634	N09	E88	132	AP	3				
81	09	26	17868	N14	E68	138	1100	3.5	22634	N10	E70	137	(AP)	4				
81	09	26	17868	N14	E68	138	1100	3.5	22637	N14	E79	128	(B)	3				
81	09	27	17868	N14	E58	134	1400	3.5	22634	N09	E56	138	(AP)	4				
81	09	27	17868	N14	E58	134	1400	3.5	22637	N13	E64	130	(AF)	4				
81	09	27	17868	N14	E58	134	1400	3.5	22639	N15	E52	142	(AP)	3				
81	09	28	17868	N14	E46	133	1500	3.5	22634	N10	E43	138	(AP)	4				

CONT

REGIONS OF SOLAR ACTIVITY

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HALE REGION 17868 (CONT) CMP DATE 2.3

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	09	28	17868	N14	E46	133	1600	3.5	22637	N15	E52	129	(B)	4				
81	09	28	17868	N14	E46	133	1600	3.5	22639	N17	E40	141	(B)	3				
81	09	29	17868						22634	N10	E26	138	AP	3	H	20	1	HRX
81	09	29	17868						22639	N16	E22	142	B	4	H	90	6	DAO
81	09	29	17868						22637	N14	E33	131	B	4	H	110	11	DAO
81	09	30	17868	N15	E21	133	2200	4.0	22634	N10	E14	140	AP	3	H	10	1	HRX
81	09	30	17868	N15	E21	133	2200	4.0	22639	N16	E12	142	B	4	H	90	5	DAO
81	09	30	17868	N15	E21	133	2200	4.0	22637	N14	E21	133	B	4	H	130	20	DAI
81	10	3	17868							N15	W20				H	60	6	CSO
81	10	4	17868						22648	N08	W38	140	X	1	B	20	1	HRX
81	10	4	17868						22639	N17	W45	147	(AP)	4	H		1	AXX
81	10	4	17868						22637	N15	W33	135	(B)	3	H	10	2	AXX
81	10	5	17868	N15	W47	132	2000	2.5	22637	N14	W47	135	(AP)	2	L		1	AXX
81	10	6	17868	N15	W56	132	2200	2.0	22637	N16	W56	131	(AF)	3				
81	10	7	17868	N15	W69	131	1500	2.0		N14	W59				M	670	23	EAI
81	10	8	17868	N17	W84	133	900	2.0		N14	W74				H	710	8	EKI

HALE REGION 17881 CMP DATE 2.9 RETURN OF TRAILING PORTION OF 17824 ROTATION 3

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	09	26	17881						22638	S16	E88	119	AP	3				
81	09	27	17881						22638	S17	E70	124	(AP)	4				
81	09	28	17881						22638	S17	E57	124	(AP)	4				
81	09	29	17881						22638	S17	E39	125	AP	4	H	100	2	HSX
81	09	30	17881						22638	S17	E28	126	AP	4	H	120	7	CSO
81	10	3	17881							S18	W11				H	80	2	HSX
81	10	4	17881						22638	S10	W24	126	(AP)	4	M	50	6	CSO
81	10	4	17881						22650	S24	W30	132	(AF)	2	B		1	AXX
81	10	5	17881	S17	W39	124	800	2.0	22638	S17	W37	125	(AP)	4	B	40	1	HSX
81	10	6	17881	S17	W50	126	500	2.0	22638	S17	W51	126	(AP)	4	B	10	1	CSO
81	10	6	17881	S17	W50	126	500	2.0	22661	S15	W42	117	X	1	B	10	1	CSO
81	10	7	17881	S16	W63	125	600	2.5	22638	S17	W64	126	(AP)	3	H	70	1	HSX
81	10	8	17881	S15	W76	125	500	2.0		S16	W69				L	20	1	HRX

HALE REGION 17876 CMP DATE 3.6

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	09	30	17876	N14	E44	110	400	3.5	22643	N13	E42	112	B	3	H	80	8	BXO
81	10	3	17876							N13	W01				H	70	14	DAI
81	10	4	17876						22643	N13	W15	117	(B)	5	H	190	14	CSO
81	10	5	17876	N13	W30	115	2400	3.5	22643	N12	W28	116	(B)	5	B	220	9	DSO
81	10	6	17876	N13	W40	116	2600	3.5	22643	N13	W40	115	(D)	5	B	250	13	DSI
81	10	7	17876	N13	W54	116	3000	3.5	22643	N13	W53	115	(B)	5	H	480	14	EHI
81	10	8	17876	N14	W67	116	3800	3.5	22643	N13	W67	116	(B)	5	H	710	8	EKI
81	10	9	17876	N15	W78	113	3500	3.0	22643	N13	W79	115	(B)	4	H	280	10	EAI

HALE REGION 17873 CMP DATE 4.3

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	09	28	17873	S16	E71	108	600	3.0	22640	S17	E76	105	X	2				
81	09	29	17873						22640	S18	E60	104	B	4	H	90	4	CSO
81	09	30	17873	S16	E50	104	1900	3.5	22640	S17	E49	105	B	3	H	100	14	ESI
81	10	3	17873							S17	E07				H	130	9	DKI
81	10	4	17873						22640	S17	W06	108	(B)	4	H	120	10	DAO
81	10	5	17873	S20	W21	106	2300	2.0	22640	S19	W19	107	(B)	4	B	40	8	CAO
81	10	6	17873	S20	W30	106	2400	1.5	22640	S19	W31	106	(B)	3	B	10	2	BXX
81	10	7	17873	S19	W43	105	2300	1.5	22640	S20	W45	107	(AP)	3	M	20	4	BXO
81	10	8	17873	S17	W56	105	1600	2.0		S21	W48				B	20	2	BXO
81	10	9	17873	S16	W69	104	1100	2.0		S12	W60				P	120	1	HAX

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HALE REGION 17882 CMP DATE 4.8

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	3	17882						N08 E12				B	10	3	BXO
81	10	4	17882					22651	N07 E04	98	(BY)	4	H	20	8	BXO
81	10	5	17882	N05 W14	99	400	2.0	22651	N06 W10	98	(BY)	4	B	10	6	BXO
81	10	6	17882	N05 W24	100	300	2.0	22651	N07 W24	99	(B)	3	B	20	2	BXX
81	10	7	17882	N06 W37	99	300	1.5	22651	N07 W38	100	(B)	4	H	80	2	DSO
81	10	8	17882	N07 W53	102	700	3.0	22651	N07 W52	101	(B)	3	H	20	4	BXO
81	10	9	17882	N07 W67	102	900	2.5	22651	N08 W64	100	(B)	3	B		2	BXO
81	10	10	17882	N07 W82	101	400	2.0									

HALE REGION 17883 CMP DATE 4.9

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	3	17883						S27 E16				H	10	2	BXO
81	10	4	17883					22655	S27 E06	96	(AF)	3	H	10	3	BXO
81	10	5	17883	S28 W13	98	600	1.5	22655	S27 W08	96	(AF)	3	R	10	1	AXX
81	10	6	17883	S28 W22	98	400	1.0									
81	10	7	17883	S29 W33	95	400	1.5									
81	10	8	17883	S27 W47	96	200	1.0		S23 W45				H	20	3	BXO
81	10	9	17883	S27 W61	96	200	1.0									

HALE REGION 17895 CMP DATE 5.0 NEW (CYCLE 22 POLARITY)

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	7	17895	N55 W35	97	200	2.0									

HALE REGION 17885 CMP DATE 5.4

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	3	17885						S09 E24				R	90	14	DRO
81	10	4	17885					22653	S18 E03	99	(AF)	3	M	120	19	DAO
81	10	5	17885	S13 W07	92	600	2.0	22653	S16 W11	99	(AF)	2	B	40	8	CAO
81	10	6	17885	S13 W17	93	800	2.0	22653	S17 W23	98	(B)	2	B	10	2	BXX
81	10	6	17885	S13 W17	93	800	2.0	22662	S11 W14	89	(B)	4	B	60	8	CSO
81	10	7	17885	S13 W28	90	800	2.0	22662	S11 W28	90	(B)	4	H	80	5	DSO
81	10	8	17885	S13 W43	92	800	2.0	22662	S11 W44	93	(BP)	4	H	90	2	CSO
81	10	9	17885	S13 W56	91	1000	1.5	22662	S11 W57	93	(BP)	3	H	70	1	HSX
81	10	10	17885	S13 W72	91	1100	2.0	22662	S11 W69	91	(BP)	2	B	10	3	BXO
81	10	11	17885						S10 W75				L	20	1	HSX

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HALE REGION 17902 CMP DATE 5.8

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	7	17902						22667	S22	W23	85	X	1	M	20	4	BXO
81	10	8	17902	S22	W37	86	400	1.5	22667	S22	W37	86	(B)	4	H	20	3	BXO
81	10	9	17902	S23	W51	86	300	1.5	22667	S22	W49	85	(B)	2	R	20	2	BXO

HALE REGION 17877 CMP DATE 6.8 RETURN OF LEADING PORTION OF 17830 ROTATION 2

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	09	30	17877	N07	E68	86	800	3.0										
81	10	3	17877							N09	E47				B	140	12	DAI
81	10	4	17877						22657	N08	E26	76	(B)	3	B	150	20	CAI
81	10	5	17877	N05	E12	73	1000	2.0	22657	N08	E16	72	(B)	3	B	20	6	CRO
81	10	6	17877	N05	E02	74	600	1.5	22665	N01	E07	68	(AP)	3				
81	10	7	17877	N06	W13	75	800	1.5	22657	N07	W12	74	(AP)	3	H	90	7	CSO
81	10	8	17877	N07	W26	75	1000	2.0		N09	W23				H	100	3	CSO
81	10	9	17877	N06	W40	75	1200	2.0	22676	N09	W36	72	(AP)	3	H	60	1	HSX
81	10	10	17877	N06	W57	76	800	1.5		N09	W48				P	60	2	HAX
81	10	11	17877							N08	W62				P	60	1	HSX
81	10	12	17877							N08	W74				P	20	1	HRX

HALE REGION 17878 CMP DATE 6.8

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	09	30	17878	S06	E78	76	300	3.0	22645	S07	E88	66	X	2	H	50	1	HSX
81	10	3	17878							S06	E41				H	80	11	CAO
81	10	4	17878						22645	S05	E29	73	(BY)	4	H	90	8	CAO
81	10	5	17878	S07	E12	73	1000	3.0	22645	S06	E15	73	(BP)	4	B	30	8	CSO
81	10	6	17878	S06	E02	74	1000	2.5	22645	S07	E02	73	(BP)	3	B	30	5	CSO
81	10	7	17878	S06	W12	74	1300	3.0	22645	S06	W13	75	(AP)	2	H	20	6	BXO
81	10	8	17878	S05	W26	75	1400	2.5	22645	S07	W26	75	(B)	4	H	70	7	DAO
81	10	9	17878	S05	W42	77	1600	2.0	22645	S06	W39	75	(B)	3	H	40	7	CSO
81	10	10	17878	S06	W57	76	2000	2.0	22645	S06	W55	77	(AP)	3	L	30	1	HSX
81	10	11	17878							S05	W67				L		1	AXX

HALE REGION 17886 CMP DATE 6.8 RETURN OF REGION 17829 ROTATION 2

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	4	17886						22656	N28	E21	81	(AP)	3	H	10	2	AXX
81	10	5	17886	N34	E12	73	1200	1.0										
81	10	6	17886	N33	E02	74	800	1.0										
81	10	7	17886	N35	W10	72	700	1.0										
81	10	8	17886	N34	W23	72	700	1.0										
81	10	9	17886	N34	W37	72	600	1.0										
81	10	10	17886	N34	W52	71	600	1.0										

HALE REGION 17888 CMP DATE 6.9

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	5	17888	S17	E14	71	400	1.0										
81	10	6	17888	S17	E04	72	300	1.0										
81	10	7	17888	S16	W08	70	200	1.0		S11	W09				B	20	18	BXO
81	10	8	17888	S16	W22	71	300	1.0										

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HALE REGION 17907 CMP DATE 7.0

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	9	17907	S16 W36	71	100	1.0		S21 W41				M	30	2	BXO

HALE REGION 17887 CMP DATE 7.1

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	4	17887					22658	N20 E31	71	(B)	3	H	20	8	BXO
81	10	5	17887	N20 E17	68	300	1.5	22658	N19 E17	71	(B)	4	B	20	6	CRO
81	10	6	17887	N18 E07	69	300	1.0	22663	N14 E01	74	(AP)	2	B	70	3	HSX
81	10	6	17887	N18 E07	69	300	1.0	22658	N20 E03	72	(B)	4	B	20	2	BXX
81	10	7	17887	N18 W07	69	500	2.0	22658	N19 W11	73	(B)	3	H	10	2	BXO
81	10	8	17887	N17 W23	72	800	2.0	22670	N13 W25	74	(AP)	3	H	100	3	CSO
81	10	9	17887	N17 W36	71	800	2.0	22677	N19 W36	72	(B)	3	H	30	4	BXO
81	10	10	17887	N17 W52	71	800	2.0	22677	N19 W50	72	(B)	3	B	10	4	BXO
81	10	11	17887						N19 W65				R	40	1	HAX
81	10	12	17887						N17 W72				L		1	AXX

HALE REGION 17889 CMP DATE 8.0 RETURN OF 17837&TRAILING PART OF 17830 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	09	30	17889					22644	N08 E88	66	X	2	H	30	1	HSX
81	10	3	17889						N10 E49				H	180	14	DAO
81	10	4	17889					22644	N10 E36	66	(BY)	4	H	220	16	DAO
81	10	5	17889	N10 E30	55	2500	2.0	22644	N09 E22	66	(AP)	5	B	100	7	DAO
81	10	6	17889	N10 E20	56	2500	2.0	22664	N14 E18	57	AF	2	B	10	1	AXX
81	10	6	17889	N10 E20	56	2500	2.0	22644	N09 E10	65	(AP)	4	B	70	3	HSX
81	10	7	17889	N12 E05	57	2700	2.0	22664	N15 E05	57	(AF)	2	H	10	2	BXO
81	10	7	17889	N12 E05	57	2700	2.0	22644	N08 W04	66	(AP)	5	H	90	7	CSO
81	10	7	17889	N12 E05	57	2700	2.0	22668	N05 E10	52	(AF)	2	H	10	2	BXO
81	10	8	17889	N13 W10	59	2300	2.0	22644	N08 W17	66	(AP)	4	H	100	3	CSO
81	10	8	17889	N13 W10	59	2300	2.0	22664	N13 W08	57	(AF)	3	H	20	5	BXO
81	10	9	17889	N13 W23	58	2600	2.0	22664	N13 W20	56	(AF)	3	H	30	7	BXO
81	10	9	17889	N13 W23	58	2600	2.0	22644	N09 W31	67	(AP)	4	H	60	1	HSX
81	10	10	17889	N13 W38	57	2700	2.0	22644	N09 W44	66	(AP)	4	B	70	2	HSX
81	10	11	17889						N08 W58				B	10	1	AXX
81	10	12	17889						N09 W71				H	20	1	HAX
81	10	13	17889	N13 W75	57	1000	1.5		N08 W78				L		1	AXX

HALE REGION 17890 CMP DATE 8.3

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	5	17890	S13 E34	51	500	3.5	22660	S12 E36	52	(B)	2	P	30	5	BXO
81	10	6	17890	S13 E24	52	1200	3.5	22666	S10 E33	42	(AP)	2	L	100	25	DAI
81	10	6	17890	S13 E24	52	1200	3.5	22660	S10 E23	52	(BY)	5	B	130	16	DSI
81	10	7	17890	S12 E10	52	1800	3.5	22660	S10 E10	52	(D)	5	H	240	18	DSI
81	10	8	17890	S11 W05	54	2200	3.0	22660	S10 W05	54	(B)	5	H	390	19	EAI
81	10	9	17890	S10 W19	54	2700	3.5	22660	S10 W18	54	(D)	4	H	370	29	EAI
81	10	10	17890	S10 W35	54	3200	3.5	22660	S09 W31	53	(D)	5	B	420	18	DKI
81	10	11	17890						S12 W45				B	300	8	EKI
81	10	12	17890						S09 W58				H	250	9	DAO
81	10	13	17890	S10 W74	56	3300	3.0	22660	S09 W75	57	BP	4	H	210	4	CSO

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HALE REGION 17897 CMP DATE 8.9

				CALCIUM PLAGE DATA						SUNSPOT DATA						
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	7	17897	N13 E17	45	400	1.5		N13 E13				L	20	8	BXO
81	10	8	17897	N13 E03	46	400	1.5	22671	N12 E02	47	(B)	3	B	10	4	CRO
81	10	9	17897	N13 W12	47	500	2.0	22671	N12 W11	47	(B)	3	H	30	7	BXO
81	10	10	17897	N13 W27	46	500	2.0	22671	N13 W25	47	(B)	2	M	10	3	BXO
81	10	13	17897	N15 W64	46	400	1.5									
81	10	14	17897	N15 W77	47	300	1.0									

HALE REGION 17891 CMP DATE 9.3

				CALCIUM PLAGE DATA						SUNSPOT DATA						
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	5	17891	S12 E45	40	100	2.0									

HALE REGION 17917 CMP DATE 9.4

				CALCIUM PLAGE DATA						SUNSPOT DATA						
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	12	17917						S13 W41				H	20	4	BXO
81	10	13	17917	S13 W56	38	400	2.0		S13 W54				H	10	3	BXO
81	10	14	17917	S13 W70	40	200	1.0		S14 W60				M	10	1	AXX

HALE REGION 17903 CMP DATE 9.6

				CALCIUM PLAGE DATA						SUNSPOT DATA						
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	8	17903	N29 E12	37	100	1.0									

HALE REGION 17893 CMP DATE 10.2 RETURN OF REGION 17838 ROTATIONS 4 AND 5

				CALCIUM PLAGE DATA						SUNSPOT DATA						
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	5	17893	N13 E56	29	800	1.0									
81	10	6	17893	N13 E46	30	800	1.0									
81	10	7	17893	N14 E34	28	700	1.0									
81	10	8	17893	N14 E21	28	600	1.5		N18 E31				L		1	AXX
81	10	9	17893	N14 E06	29	500	1.0									
81	10	10	17893	N14 W09	28	500	1.0		N12 W16				M	10	3	BXO

HALE REGION 17904 CMP DATE 10.3

				CALCIUM PLAGE DATA						SUNSPOT DATA						
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	8	17904	N05 E22	27	100	1.0									

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HALE REGION 17896 CMP DATE 10.5

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	7	17896	N18 E38	24	200	1.5									
81	10	8	17896	N18 E25	24	100	1.5		N18 E31				L		1	AXX
81	10	9	17896	N18 E11	24	100	1.0	22678	N17 E10	26	(AP)	2				
81	10	10	17896	N18 W05	24	100	2.0	22678	N19 W02	24	(B)	2	M	20	2	BXO

HALE REGION 17918 CMP DATE 10.9

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	11	17918						N18 W07				B	20	3	CSO
81	10	12	17918						N18 W22				H	110	17	DAI
81	10	13	17918	N18 W37	19	1100	3.0	22685	N18 W34	16	B	4	H	130	10	DSI
81	10	14	17918	N18 W49	19	1400	3.5	22685	N18 W47	17	(B)	4	H	110	12	DAO
81	10	15	17918	N18 W63	19	1400	3.5	22685	N19 W61	17	(B)	4	H	180	7	DAO
81	10	16	17918	N19 W75	19	1100	3.5	22685	N19 W77	20	(BP)	3	H	140	2	CSO
81	10	17	17918	N19 W87	18	400	2.0		N19 W82				M	120	2	CAO

HALE REGION 17892 CMP DATE 11.0 RETURN OF REGION 17839 ROTATION 3

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	5	17892	S15 E65	20	800	1.5									
81	10	6	17892	S15 E57	19	1000	1.5									
81	10	7	17892	S15 E44	18	1200	1.0									
81	10	8	17892	S15 E30	19	1500	1.5									
81	10	9	17892	S15 E17	18	1500	1.5	22679	S20 E25	11	(AP)	2				
81	10	10	17892	S15 E02	17	1500	1.5									
81	10	13	17892	S15 W37	19	1200	1.0		S13 W47				L	10	3	BXO
81	10	14	17892	S15 W51	21	1000	1.0		S14 W60				M	10	1	AXX

HALE REGION 17905 CMP DATE 12.2

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	8	17905	S17 E51	358	400	3.5	22672	S17 E52	357	(B)	4	H	50	4	DRO
81	10	9	17905	S16 E38	357	1500	3.0	22672	S17 E38	358	(B)	4	H	180	10	DAO
81	10	10	17905	S16 E21	358	2300	3.5	22672	S17 E24	358	(BY)	4	B	180	10	DAO
81	10	11	17905						S18 E13				B	220	8	DSO
81	10	12	17905						S15 W04				H	180	14	ESO
81	10	13	17905	S15 W19	1	1800	2.5	22672	S17 W17	359	B	4	H	160	12	ESO
81	10	14	17905	S16 W32	2	1300	2.0	22672	S17 W35	5	(B)	4	H	40	1	HSX
81	10	15	17905	S16 W45	1	1300	1.5	22672	S17 W44		(B)	4	H	10	5	BXO
81	10	16	17905	S16 W59	3	1600	2.0	22672	S16 W57		(B)	4	H	40	2	CSO
81	10	17	17905	S15 W71	2	1300	2.0	22672	S16 W71	1	(B)	3	H	40	8	CSO
81	10	18	17905	S15 W84	359	1500	2.5		S15 W75				M	20	3	BXO

HALE REGION 17911 CMP DATE 12.2

			CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	10	17911	N11 E09	10	100	1.5									

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HALE REGION 17884 CMP DATE 12.7

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	3	17884						S06 E20				H	50	7	CSO
81	10	4	17884					22652	S07 E08	94	(BY)	4	H	150	14	DAO
81	10	5	17884	S08 W10	95	1700	3.0	22652	S09 W05	93	(B)	4	B	100	13	CAI
81	10	6	17884	S07 W19	95	2000	2.5	22652	S09 W17	92	(B)	4	B	60	8	CSO
81	10	7	17884	S07 W33	95	1700	2.5	22652	S08 W33	95	(B)	4	H	150	20	DSO
81	10	8	17884	S07 W46	95	1700	3.0	22652	S07 W48	97	(B)	4	H	130	5	DAO
81	10	9	17884	S07 W62	97	2100	2.5	22652	S07 W61	97	(BP)	4	H	80	5	CSO
81	10	10	17884	S07 W76	95	2000	2.0	22652	S07 W75	98	(BP)	3	B		1	AXX
81	10	11	17884						S06 W81				L	50	1	HSX

HALE REGION 17927 CMP DATE 12.7

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	13	17927					22686	S04 W16	358	X	2				
81	10	15	17927	S05 W40	356	200	1.5	22686	S06 W37	353	(AF)	2				
81	10	16	17927	S05 W53	357	200	1.0									
81	10	17	17927	S05 W66	357	200	1.0									

HALE REGION 17900 CMP DATE 12.9

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	7	17900	S15 E69	353	100	1.5									

HALE REGION 17912 CMP DATE 12.9

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	10	17912	S05 E26	353	100	1.0									

HALE REGION 17928 CMP DATE 13.6

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	15	17928	S09 W28	344	100	1.0									

HALE REGION 17898 CMP DATE 13.8 RETURN OF REGION 17842 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	7	17898	N20 E80	342	600	1.5	22669	N16 E71	351	(AP)	2	H		1	AXX
81	10	8	17898	N20 E67	342	2500	3.5	22669	N16 E60	349	(AP)	3	H		1	AXX
81	10	9	17898	N20 E54	341	2200	2.5	22669	N17 E48	348	(AP)	3	R	30	1	AXX
81	10	10	17898	N21 E39	340	2100	2.0	22681	N22 E42	340	(AF)	3	B	10	3	BXO
81	10	11	17898						N18 E36				P	250	1	HHX
81	10	12	17898						N19 E24				P	300	1	HHX
81	10	13	17898	N22 E02	340	1400	1.5	22688	N15 W01	343	AP	3				
81	10	14	17898	N23 W10	340	1200	1.0	22688	N16 W14	344	(AP)	2	M	740	37	EKC
81	10	15	17898	N23 W23	339	1400	1.0		N19 W14				P	190	1	HSX
81	10	16	17898	N23 W35	339	1500	1.0		N20 W25				H	180	1	HHX
81	10	17	17898	N24 W48	339	1200	1.0		N20 W39				H	170	2	CSO
81	10	18	17898	N25 W62	337	1000	1.0									
81	10	19	17898	N25 W77	339	900	1.0									

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HALE REGION 17901 CMP DATE 13.9 17901 LATER MERGES WITH 17906

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	7	17901	S19 E82	340	500	3.0									
81	10	8	17901	S21 E68	341	800	3.0	22674	S21 E70	339	(BP)	3	H	400	11	EKI
81	10	9	17901	S22 E54	341	900	4.0	22674	S21 E57	339	(B)	4	H	840	18	FKI
81	10	10	17901	S22 E40	339	1100	4.0	22674	S21 E42	340	(D)	4	B	250	8	DHI
81	10	11	17901						S22 E32				B	360	8	DHI
81	10	12	17901						S21 E17				H	440	19	DKI

HALE REGION 17906 CMP DATE 14.3

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	8	17906	S18 E75	334	2000	3.5	22675	S17 E78	331	X	3	H	400	11	EKI
81	10	9	17906	S17 E63	332	3000	3.5	22675	S18 E64	332	(D)	4	H	840	18	FKI
81	10	10	17906	S18 E49	330	3400	3.5	22675	S18 E51	331	(D)	5	B	550	11	DKC
81	10	11	17906						S22 E32				B	360	8	DHI
81	10	12	17906						S17 E26				H	1260	49	EKI
81	10	13	17906	S17 E08	334	5800	4.0	22675	S18 E09	333	D	5	H	1630	47	EKC
81	10	14	17906	S17 W05	335	6000	4.0	22675	S19 W04	334	(D)	5	H	1450	74	EKC
81	10	15	17906	S17 W18	334	6000	3.5	22675	S18 W17	333	(D)	3	H	1390	59	EKI
81	10	16	17906	S17 W31	335	6400	3.5	22675	S18 W30	333	(D)	5	H	1450	49	EKC
81	10	17	17906	S17 W44	335	5800	3.5	22675	S18 W43	333	(D)	5	H	1020	42	FKI
81	10	18	17906	S17 W58	333	5500	3.5	22675	S18 W58	335	(D)	5	H	670	15	EKO
81	10	19	17906	S18 W72	334	4000	3.0	22675	S18 W72	336	(BP)	4	H	530	7	FKO
81	10	20	17906	S18 W85	336	800	3.0	22675	S18 W78	328	(AF)	4	H	100	4	CSO

HALE REGION 17908 CMP DATE 14.8

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	9	17908	S29 E65	330	400	1.5									
81	10	10	17908	S29 E51	328	100	1.0									

HALE REGION 17899 CMP DATE 14.9 RETURN OF REGION 17857 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	7	17899	N21 E85	337	500	2.5									
81	10	8	17899	N20 E77	332	1500	3.0	22673	N19 E68	341	(BP)	3	H		1	AXX
81	10	9	17899	N20 E66	329	1800	2.0	22680	N23 E70	326	(AF)	2	H	190	2	CSO
81	10	9	17899	N20 E66	329	1800	2.0	22673	N19 E65	331	(BP)	4	H	190	2	CSO
81	10	10	17899	N19 E52	327	1800	2.0	22680	N23 E55	327	(B)	3	B	10	3	BXO
81	10	10	17899	N19 E52	327	1800	2.0	22673	N19 E53	329	(AP)	5	B	160	2	HSX
81	10	11	17899						N17 E40				B	120	1	HSX
81	10	12	17899						N19 E26				H	230	2	HSX
81	10	13	17899	N20 E16	326	1300	2.0	22673	N19 E14	328	AP	5	H	240	1	HSX
81	10	14	17899	N20 E04	326	1400	2.0	22673	N19 E01	329	(BP)	5	H	170	9	CHO
81	10	15	17899	N19 W10	326	1700	2.0	22673	N19 W13	329	(BP)	5	H	230	3	CHO
81	10	16	17899	N20 W22	326	1500	2.0	22673	N19 W25	328	(AP)	4	H	180	1	HHX
81	10	17	17899	N20 W34	325	1500	2.0	22673	N19 W38	328	(AP)	5	H	170	2	CSO
81	10	18	17899	N22 W48	323	1500	2.5	22673	N18 W51	328	(AP)	4	H	190	3	DSO
81	10	19	17899	N21 W61	323	1700	2.5	22673	N18 W64	328	(AP)	4	H	210	3	HAX
81	10	20	17899	N20 W73	324	1400	2.5	22673	N18 W68	318	(AP)	4	B	120	1	HSX

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HALE REGION 17910 CMP DATE 15.0

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	9	17910	N10	E70	325	400	1.5										

HALE REGION 17919 CMP DATE 15.0

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	11	17919							N17	E40				B	120	1	HSX
81	10	13	17919	N13	E17	325	200	1.5		N18	E15				R	200	1	HSX
81	10	14	17919	N13	E05	325	200	2.0										
81	10	15	17919	N13	W12	328	500	2.5	22698	N14	W13	329	(BP)	4	H	20	7	BXO
81	10	16	17919	N13	W24	328	600	2.5	22698	N13	W24	327	(B)	4	H	60	7	DAO
81	10	17	17919	N13	W36	327	700	2.5	22698	N14	W38	328	(BP)	4	H	40	4	CRO
81	10	18	17919	N14	W52	327	500	2.5	22698	N13	W52	329	(AP)	3	H	20	2	BXO
81	10	19	17919	N14	W65	327	500	2.0	22698	N13	W65	329	(AP)	3	H		1	AXX
81	10	20	17919	N14	W77	328	400	2.0		N18	W79				H	130	1	HSX

HALE REGION 17914 CMP DATE 15.3 RETURN OF REGION 17845 ROTATION 5

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	10	17914	S09	E56	323	300	1.0										
81	10	13	17914	S07	E22	320	500	1.5	22687	S10	E14	328	X	2	H	90	12	DRO
81	10	13	17914	S07	E22	320	500	1.5	22690	S08	E23	319	X	4	H	90	12	DRO
81	10	14	17914	S07	E09	321	600	1.5	22693	S07	W02	332	(AF)	2				
81	10	14	17914	S07	E09	321	600	1.5	22690	S06	E08	322	(AP)	3	H	20	6	CAO
81	10	15	17914	S07	W05	321	600	1.5	22690	S05	W06	322	(AP)	2	H		2	AXX
81	10	16	17914	S06	W19	323	500	1.0										
81	10	17	17914	S06	W31	322	500	1.5										
81	10	18	17914	S05	W47	322	400	1.5		S04	W39				H		1	AXX
81	10	19	17914	S06	W59	321	400	1.0										
81	10	20	17914	S06	W72	323	300	1.0										

HALE REGION 17915 CMP DATE 15.4

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	10	17915	S20	E63	316	600	1.5		S19	E59				M	620	15	FKI
81	10	11	17915							S17	E47				B	1150	10	FKC
81	10	12	17915							S19	E39				H	60	8	CAO
81	10	13	17915	S19	E24	318	600	2.5	22691	S18	E28	314	X	3	H	60	4	CAO
81	10	13	17915	S19	E24	318	600	2.5	22689	S19	E20	322	BP	4	H	60	4	CAO
81	10	14	17915	S19	E10	320	700	3.0	22689	S20	E08	322	(B)	4	H	40	7	DRO
81	10	15	17915	S20	W04	320	900	3.5	22689	S19	W05	321	(B)	4	H	130	9	DAO
81	10	16	17915	S20	W17	321	1300	3.5	22689	S19	W18	321	(B)	4	H	200	8	DAO
81	10	17	17915	S20	W29	320	1800	3.5	22689	S19	W30	320	(B)	4	H	410	9	DKO
81	10	18	17915	S19	W46	321	2500	3.5	22689	S19	W43	320	(B)	5	H	500	17	DAI
81	10	19	17915	S19	W58	320	3200	3.5	22689	S19	W56	320	(B)	4	H	750	12	EKI
81	10	20	17915	S19	W71	322	3300	3.5	22689	S19	W68	318	(B)	4	H	1030	10	EKI
81	10	21	17915	S19	W85	322	1200	3.5	22689	S19	W77	314	AF	3	R	480	12	DKO

HALE REGION 17924 CMP DATE 15.4

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	14	17924	S11	E10	320	100	2.0	22694	S11	E10	320	(AF)	3	H	20	6	CAO

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HALE REGION 1794Ø CMP DATE 15.7

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	1Ø	19	17940	NØ7 W54	316	1ØØ	1.5									

HALE REGION 17909 CMP DATE 16.Ø RETURN OF NORTHERN PORTION OF 1785Ø ROTATION 5

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	1Ø	9	17909	SØ7 E88	3Ø7	4ØØ	3.Ø									
81	1Ø	1Ø	17909	SØ7 E68	311	4ØØ	1.5	22682	SØ4 E69	313	(AF)	2	P		1	AXX
81	1Ø	13	17909	SØ6 E3Ø	312	5ØØ	2.Ø		SØ8 E24				H	9Ø	12	DRO
81	1Ø	14	17909	SØ5 E17	313	6ØØ	2.Ø		SØ9 E1Ø				H	2Ø	6	CAO
81	1Ø	15	17909	SØ5 EØ4	312	6ØØ	1.5	22699	SØ5 EØ7	3Ø9	(AF)	2	H		1	AXX
81	1Ø	16	17909	SØ6 WØ9	313	6ØØ	2.Ø									
81	1Ø	17	17909	SØ6 W22	313	5ØØ	2.Ø									
81	1Ø	18	17909	SØ5 W37	312	5ØØ	2.Ø	22710	SØ5 W38	315	(AP)	3	H		1	AXX
81	1Ø	19	17909	SØ5 W48	31Ø	4ØØ	1.5		SØ6 W43				H		1	AXX
81	1Ø	2Ø	17909	SØ7 W6Ø	311	3ØØ	1.5									

HALE REGION 17913 CMP DATE 16.1 RETURN OF REGION 17844 ROTATION 3

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	1Ø	1Ø	17913	N15 E68	311	4ØØ	1.5		N2Ø E61				H	22Ø	3	CSO
81	1Ø	11	17913						N2Ø E47				L	11Ø	1	HSX
81	1Ø	12	17913						N19 E35				L	2ØØ	1	HSX

HALE REGION 17931 CMP DATE 16.7

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	1Ø	15	17931					22700	S2Ø E2Ø	296	X	1				
81	1Ø	16	17931	S2Ø EØ1	3Ø3	4ØØ	2.5	22700	S2Ø WØØ	3Ø3	(B)	3	H	1Ø	4	BXO
81	1Ø	17	17931	S2Ø W12	3Ø3	2ØØ	1.5	22700	S21 W12	3Ø2	(AF)	2	H		1	AXX

HALE REGION 17932 CMP DATE 17.1

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	1Ø	16	17932	N24 EØ7	297	1ØØ	1.5									

HALE REGION 17916 CMP DATE 17.2 RETURN OF REGION 1785Ø ROTATION 5

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	1Ø	1Ø	17916	S15 E73	3Ø6	5ØØ	1.5									
81	1Ø	13	17916	S15 E48	294	25ØØ	2.Ø	22684	S15 E54	288	X	3				
81	1Ø	13	17916	S15 E48	294	25ØØ	2.Ø	22683	S12 E56	286	X	3				
81	1Ø	14	17916	S15 E33	297	25ØØ	2.Ø	22695	S13 E45	285	(AF)	3	R	171Ø	62	EKI
81	1Ø	15	17916	S15 E2Ø	296	27ØØ	2.5	22695	S12 E32	284	(AF)	2				
81	1Ø	16	17916	S15 EØ8	296	22ØØ	2.Ø	22695	S12 E18	285	(AF)	2				
81	1Ø	17	17916	S15 WØ5	296	24ØØ	2.Ø	22707	S11 WØ3	293	(AP)	2	H	1Ø	4	BXO
81	1Ø	18	17916	S14 W22	297	25ØØ	2.Ø									
81	1Ø	19	17916	S15 W33	295	25ØØ	2.5									
81	1Ø	2Ø	17916	S15 W45	296	2ØØØ	2.5									
81	1Ø	21	17916	S15 W57	294	14ØØ	2.5									
81	1Ø	22	17916	S17 W7Ø	294	13ØØ	2.Ø									

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HALE REGION 17916 (CONT) CMP DATE 17.2 RETURN OF REGION 17850 ROTATION 5

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	23	17916	S13	W83	294	500	2.0										

HALE REGION 17920 CMP DATE 17.3 RETURN OF REGION 17848 ROTATION 2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	13	17920	N17	E47	295	300	1.5										
81	10	14	17920	N17	E34	296	300	1.5										
81	10	15	17920	N16	E21	295	300	1.5										
81	10	16	17920	N16	E08	296	200	2.0										
81	10	17	17920	N17	W04	295	100	1.0										
81	10	18	17920	N17	W21	296	100	1.0										
81	10	19	17920	N17	W34	296	300	1.5										
81	10	20	17920	N17	W46	297	300	1.5										
81	10	21	17920	N17	W60	297	300	1.5										
81	10	22	17920	N16	W74	298	200	1.5										

HALE REGION 17921 CMP DATE 18.5 RETURN OF PORTIONS OF 17853 & 17854 ROTATIONS 2 AND 4

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	13	17921	N15	E62	280	700	1.0										
81	10	14	17921	N14	E50	280	800	1.5										
81	10	15	17921	N14	E37	279	1400	1.5										
81	10	16	17921	N14	E24	280	1200	1.0	22702	N09	E17	286	(AP)	2				
81	10	17	17921	N14	E11	280	1200	1.5										
81	10	18	17921	N15	W04	279	1300	1.5										
81	10	19	17921	N15	W17	279	1200	1.5										
81	10	20	17921	N15	W30	281	1000	1.5										
81	10	21	17921	N15	W43	280	1300	2.0										
81	10	22	17921	N15	W57	281	1000	2.0										
81	10	23	17921	N15	W70	281	700	1.5										
81	10	24	17921	N16	W83	281	300	1.0										

HALE REGION 17923 CMP DATE 19.0

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	12	17923							S12	E80				H	600	5	CKO
81	10	13	17923	S08	E68	274	6000	4.0	22692	S10	E69	273	B	5	H	820	23	EKI
81	10	14	17923	S10	E58	272	8000	4.0	22692	S10	E57	273	(B)	5	H	1890	45	FKC
81	10	15	17923	S11	E45	271	8100	4.0	22692	S10	E44	272	(D)	5	H	2210	75	EKC
81	10	15	17923	S11	E45	271	8100	4.0	22701	S07	E31	285	(AF)	3				
81	10	16	17923	S10	E32	272	7700	3.5	22692	S10	E30	273	(D)	5	H	2440	51	EKC
81	10	17	17923	S10	E20	271	7500	3.5	22692	S10	E15	275	(D)	5	H	2710	68	EKC
81	10	18	17923	S10	E03	272	7000	4.0	22692	S10	E03	274	(D)	5	H	2050	83	FKC
81	10	19	17923	S10	W10	272	7700	3.5	22692	S11	W10	274	(D)	5	H	1740	55	FKI
81	10	20	17923	S10	W22	273	8000	4.0	22692	S11	W24	274	(B)	5	H	1900	64	FKI
81	10	21	17923	S11	W36	273	8200	3.5	22692	S11	W37	274	(B)	5	R	1770	2	FKI
81	10	22	17923	S12	W50	274	7800	3.5	22692	S11	W50	274	(BY)	5	H	1130	29	FHI
81	10	23	17923	S12	W63	274	8000	3.5	22692	S11	W62	272	(BY)	5	B	1400	21	E I
81	10	24	17923	S12	W77	275	8500	3.5	22692	S11	W78	275	(BP)	5	H	870	8	EKI

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HALE REGION 17951 CMP DATE 19.0

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	22	17951	N08	W48	272	600	3.0	22717	N08	W48	272	(B)	3	H	70	7	DSO
81	10	23	17951	N06	W60	271	1000	3.5	22717	N09	W60	270	(B)	3	B	10	2	AXX
81	10	24	17951	N08	W74	272	600	2.0										

HALE REGION 17922 CMP DATE 19.5 RETURN OF REGION 17853 ROTATION 2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	13	17922	N10	E75	267	600	1.5										
81	10	14	17922	N10	E65	265	800	1.5		N15	E70				M	10	1	AXX
81	10	15	17922	N11	E51	265	1800	2.0										
81	10	16	17922	N12	E38	266	2000	2.0	22704	N07	E32	271	(AP)	2	H		0	AXX
81	10	16	17922	N12	E38	266	2000	2.0	22703	N21	E33	270	(AF)	2				
81	10	17	17922	N12	E25	266	1600	2.0	22708	N11	E28	262	(AF)	3	M		1	AXX
81	10	18	17922	N14	E10	265	1400	2.0										
81	10	19	17922	N14	W03	265	1600	2.0										
81	10	20	17922	N14	W16	267	1300	2.0										
81	10	21	17922	N14	W30	267	1600	2.0										
81	10	22	17922	N14	W43	267	1400	2.0		N09	W48				H	70	7	DSO
81	10	23	17922	N14	W55	266	1200	2.0		N10	W59				B	10	2	AXX
81	10	24	17922	N14	W68	266	900	2.0										

HALE REGION 17941 CMP DATE 19.7

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	19	17941	N04	W01	263	100	1.5										

HALE REGION 17925 CMP DATE 20.5

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	14	17925	N17	E78	252	300	1.5	22696	N16	E75	255	(AP)	3	H	10	2	AXX
81	10	15	17925	N17	E66	250	400	1.5	22696	N17	E61	255	(AP)	3	H		3	AXX
81	10	16	17925	N17	E53	251	400	1.5										
81	10	17	17925	N18	E40	251	300	1.5	22709	N17	E38	252	(AP)	3	H	10	2	AXX
81	10	18	17925	N18	E23	252	100	1.0	22709	N18	E25	252	(AP)	3	H	10	3	BXO
81	10	19	17925	N18	E10	252	200	2.0		N18	E14				H	50	10	DRO
81	10	20	17925	N18	W02	253	100	1.5										
81	10	21	17925	N18	W15	252	100	1.0		N18	W08				R	60	8	CAO
81	10	22	17925	N18	W29	253	100	1.0		N18	W22				H	20	3	BXO

HALE REGION 17926 CMP DATE 20.7 NEW, IN LOCATION OF REGION 17856

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	14	17926	S07	E80	250	1700	2.5	22697	S10	E80	250	B	4	H	430	8	EHO
81	10	15	17926	S07	E66	250	4300	3.5	22697	S08	E68	248	(B)	3	H	780	12	EKI
81	10	16	17926	S07	E54	250	4800	4.0	22697	S08	E55	248	(D)	5	H	620	22	EKI
81	10	17	17926	S07	E42	249	4600	3.5	22697	S07	E40	250	(BY)	4	H	760	27	EKI
81	10	18	17926	S06	E26	249	4300	3.5	22697	S07	E27	250	(BY)	4	H	600	35	EAI
81	10	19	17926	S06	E13	249	4500	4.0	22697	S08	E14	250	(BY)	4	H	510	19	EKO
81	10	20	17926	S06	E01	250	4200	3.5	22697	S08	W00	250	(B)	5	R	330	42	DKI
81	10	21	17926	S06	W14	251	4600	3.5	22697	S08	W13	250	(B)	5	R	390	33	DAI
81	10	22	17926	S07	W26	250	4500	3.5	22697	S08	W26	250	(B)	4	H	290	20	DAI
81	10	23	17926	S06	W38	249	4100	3.5	22697	S08	W40	250	(B)	4	B	240	6	DAI
81	10	24	17926	S06	W51	249	3500	2.5	22697	S08	W53	250	(BP)	4	H	230	7	DSI
81	10	25	17926						22697	S08	W65	249	(B)	4	H	40	5	DAO
81	10	26	17926	S06	W77	249	2500	2.5	22697	S07	W77	248	B	2	H	50	2	DAO

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HALE REGION 17926 (CONT) CMP DATE 20.7 NEW, IN LOCATION OF REGION 17856

				CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	27	17926							S07	W86				L	30	1	HSX

HALE REGION 17929 CMP DATE 20.7

				CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	15	17929	S18	E68	248	100	2.0										
81	10	16	17929	S18	E54	250	300	1.5	22705	S18	E51	252	(B)	3	H	10	2	BXO

HALE REGION 17936 CMP DATE 21.0

				CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	18	17936	N18	E33	242	200	1.5	22711	N18	E35	242	(B)	3	H		2	BXO
81	10	19	17936	N18	E18	244	500	3.5	22711	N18	E17	247	(BY)	4	H	50	10	DRO
81	10	20	17936	N18	E05	246	400	3.0	22711	N18	E05	245	(B)	3	H	50	10	DRO
81	10	21	17936	N17	W08	245	500	2.5	22711	N18	W10	247	(B)	4	R	60	8	CAO
81	10	22	17936	N17	W22	246	300	2.0	22711	N18	W24	248	(B)	4	H	20	3	BXO
81	10	23	17936	N18	W35	246	200	1.5	22711	N19	W39	249	(AP)	3	B	50	2	CSO
81	10	24	17936	N19	W49	247	600	2.5	22711	N19	W52	249	(B)	4	H	80	6	CAO
81	10	25	17936						22711	N19	W65	249	(B)	4	H	40	4	DAO
81	10	26	17936	N20	W76	248	1000	3.0	22711	N19	W77	248	B	2	H	60	3	DAO

HALE REGION 17930 CMP DATE 21.6 RETURN OF REGION 17862 ROTATION 2

				CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	15	17930	S09	E78	238	400	2.5		S07	E71				H	780	12	EKI
81	10	16	17930	S11	E67	237	1100	2.0	22706	S09	E67	236	(B)	3	H	40	3	DRO
81	10	17	17930	S12	E55	236	1300	2.5	22706	S09	E53	237	(B)	4	H	80	7	DRO
81	10	18	17930	S10	E38	237	1200	3.0	22706	S09	E40	237	(B)	3	H	70	7	CSO
81	10	19	17930	S10	E26	236	1200	3.0	22706	S10	E26	238	(B)	3	H	10	3	CRO
81	10	20	17930	S10	E14	237	1400	2.5	22706	S10	E10	240	(AP)	3	H	10	2	AXX
81	10	21	17930	S12	W01	238	900	2.0	22706	S10	W04	241	(AP)	3	R	10	1	AXX
81	10	22	17930	S12	W12	236	900	2.0		S10	W09				L		1	AXX
81	10	23	17930	S11	W25	236	600	1.5										
81	10	24	17930	S11	W38	236	500	1.5										
81	10	26	17930	S10	W54	236	600	2.0		S07	W72				L	40	5	DSO
81	10	27	17930							S07	W86				L	30	1	HSX

HALE REGION 17933 CMP DATE 21.7

				CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	16	17933	S18	E67	237	100	2.0		S19	E63				L		2	AXX

HALE REGION 17952 CMP DATE 22.0

				CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	22	17952	S22	W08	232	100	1.0										

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HALE REGION 17942 CMP DATE 22.4 RETURN OF REGION 17858 ROTATION 4

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	19	17942	N17 E36	226	200	1.5		N17 E30				M	10	2	BXO
81	10	20	17942	N17 E24	227	100	1.5		N18 E15				M	50	10	DRO
81	10	21	17942	N17 E11	226	100	1.0		N18 E05				M	50	7	DRO
81	10	22	17942	N17 W03	227	200	1.0									

HALE REGION 17934 CMP DATE 22.5

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	16	17934	N17 E77	227	200	1.0									
81	10	17	17934	N17 E65	226	100	1.0									

HALE REGION 17953 CMP DATE 22.9

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	22	17953	N23 E04	220	100	1.0									

HALE REGION 17938 CMP DATE 23.3

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	18	17938	S14 E57	218	100	1.0		S10 E50				M	80	6	DRO
81	10	19	17938	S14 E47	215	100	1.5									

HALE REGION 17943 CMP DATE 23.7

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	19	17943	N09 E53	209	300	2.0									
81	10	20	17943	N09 E41	210	200	2.0		N06 E51				H	10	1	AXX

HALE REGION 17944 CMP DATE 24.1 RETURN OF REGION 17860 ROTATION 4

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	19	17944	N23 E58	204	100	2.5		N21 E57				H		1	AXX

HALE REGION 17939 CMP DATE 24.2 RETURN OF REGION 17865 ROTATION 2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	18	17939	S06 E70	205	2700	2.5									
81	10	19	17939	S07 E60	202	2800	3.5	22713	S07 E63	201	(AP)	3	B	20	3	BXO
81	10	20	17939	S06 E49	202	2500	2.5	22713	S07 E48	202	(AP)	3	H	10	2	AXX
81	10	21	17939	S06 E35	202	3200	2.5		S08 E36				R	10	4	BXO
81	10	22	17939	S06 E22	202	2700	2.0		S05 E19				H	20	3	AXX
81	10	23	17939	S07 E09	202	2000	2.0		S06 E11				L	10	4	BXO
81	10	24	17939	S07 W05	203	2000	2.5	22719	S06 W11	208	(AF)	3	H	30	4	CRO
81	10	25	17939					22719	S05 W26	210	(B)	4	H	60	6	DAO
81	10	26	17939	S06 W32	204	1700	2.0	22719	S05 W39	210	(B)	3	H	20	7	BXO

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HALE REGION 17939 (CONT) CMP DATE 24.2 RETURN OF REGION 17865 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
81	10	27	17939				
81	10	28	17939				
81	10	29	17939	S06 W72	203	2100	2.5

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	S05 W48				H	30	5	BXO
22719	S05 W62	206	B	4	H	120	14	DAO
22719	S05 W79	209	B	4	H	340	3	DAO

HALE REGION 17937 CMP DATE 24.9 RETURN OF REGION 17870 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
81	10	18	17937	N06 E77	198	700	2.0
81	10	19	17937	N07 E68	194	1000	2.0
81	10	20	17937	N07 E57	194	1200	2.0
81	10	21	17937	N07 E44	193	900	2.5
81	10	22	17937	N07 E30	194	600	2.0
81	10	23	17937	N07 E17	194	600	1.5
81	10	24	17937	N07 E04	194	500	2.0
81	10	26	17937	N07 W23	195	800	2.0
81	10	29	17937	N09 W62	193	600	1.5
81	10	30	17937	N10 W75	194	300	1.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
22712	N05 E65	199	(AP)	2	B	10	1	AXX
22712	N05 E51	199	(AP)	3	H	10	1	AXX
22712	N04 E38	199	(AP)	3	R	10	1	AXX
22712	N06 E20	204	(BP)	3				

HALE REGION 17945 CMP DATE 25.5

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
81	10	20	17945	S28 E68	183	500	3.0
81	10	21	17945	S28 E54	183	800	3.5
81	10	22	17945	S27 E40	184	1600	3.5
81	10	23	17945	S27 E27	184	2200	3.0
81	10	24	17945	S26 E14	184	2000	2.5
81	10	25	17945				
81	10	26	17945	S27 W14	186	2000	2.5
81	10	27	17945				
81	10	28	17945				
81	10	29	17945	S27 W53	184	2500	2.5
81	10	30	17945	S27 W65	184	2500	3.0
81	10	31	17945	S27 W78	184	1500	3.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
22714	S27 E67	183	(AP)	3	P	10	2	AXX
22714	S27 E54	183	(B)	3	P	10	4	BXO
22714	S27 E39	185	(B)	3	R	70	11	CAO
22714	S27 E25	185	(BP)	4	B	130	13	DSO
22714	S26 E09	188	(BP)	4	H	120	3	CAO
22714	S26 W01	185	(B)	4	H	90	10	DAO
22714	S26 W24	195	(BP)	4	H	120	9	CSO
	S27 W24				H	80	8	CAO
22714	S26 W42	186	AP	4	H	60	3	CSO
22714	S26 W58	188	AP	4	H	130	1	HSX
22714	S25 W69	187	(AP)	3	H	20	1	HAX
	S26 W77				L	40	1	HSX

HALE REGION 17947 CMP DATE 26.3

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
81	10	20	17947	N21 E74	177	100	1.0
81	10	21	17947	N20 E61	176	100	2.5
81	10	22	17947	N21 E48	176	100	1.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	N16 E82				R	150	2	HAX
	N20 E64				R	20	1	AXX

HALE REGION 17946 CMP DATE 27.2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
81	10	20	17946	N15 E85	156	500	3.5
81	10	21	17946	N15 E72	165	2400	3.5
81	10	22	17946	N15 E60	164	2600	3.5
81	10	23	17946	N15 E48	163	3000	3.5
81	10	24	17946	N16 E35	163	3000	3.0
81	10	25	17946				
81	10	26	17946	N16 E09	163	2400	3.0
81	10	27	17946				
81	10	28	17946				
81	10	29	17946	N16 W32	163	2400	2.5
81	10	30	17946	N16 W45	164	2700	2.5

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
22715	N15 E80	170	AP	2	H	100	1	HSX
22715	N16 E71	166	(BP)	4	R	80	6	CAO
22715	N16 E60	164	(B)	4	H	90	10	CSO
22715	N16 E44	166	(BP)	4	B	140	6	DSO
22715	N15 E33	164	(AP)	4	H	130	3	DSO
22715	N16 E18	166	(AP)	4	H	90	4	CAO
22715	N16 E04	167	(AP)	4	H	120	6	CSO
	N17 W08				H	100	4	CSO
22715	N16 W21	165	BP	4	H	100	9	DSO
22715	N16 W37	167	B	4	H	130	6	DSO
22715	N15 W48	166	(B)	4	H	80	5	CSO

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HALE REGION 17946 (CONT) CMP DATE 27.2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	31	17946	N16	W58	154	2500	3.0	22715	N15	W61	166	(B)	3	H	30	3	CAO
81	11	1	17946	N17	W71	163	2000	3.5	22715	N16	W75	167	(AP)	3				
81	11	2	17946	N17	W85	163	700	3.5										

HALE REGION 17949 CMP DATE 27.2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	21	17949	S19	E70	167	500	2.5		S24	E75				R	30	2	CRO
81	10	22	17949	S18	E58	166	300	2.0										
81	10	23	17949	S18	E46	165	500	2.0										
81	10	24	17949	S18	E34	164	400	2.0										
81	10	26	17949	S18	E08	164	300	2.0										
81	10	29	17949	S19	W37	168	300	1.0										
81	10	30	17949	S19	W50	169	100	1.0										

HALE REGION 17950 CMP DATE 27.4

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	21	17950	S33	E70	167	700	3.5	22716	S30	E71	166	(AP)	4	P	30	2	HSX
81	10	22	17950	S33	E59	165	1200	3.5	22716	S30	E56	168	(AP)	4	H	20	1	HAX
81	10	23	17950	S33	E47	164	1700	3.0	22716	S30	E43	167	(BP)	4	B	50	3	CSO
81	10	24	17950	S33	E35	163	1700	3.0	22716	S30	E31	166	(AP)	4	H	40	5	CRI
81	10	25	17950						22716	S30	E18	166	(AP)	3	H	10	1	AXX
81	10	26	17950	S33	E10	162	1300	2.5		S31	E14				L	10	3	AXX
81	10	29	17950	S34	W30	161	800	1.5										
81	10	30	17950	S33	W42	161	500	1.5										
81	10	31	17950	S34	W54	160	400	1.5										

HALE REGION 17948 CMP DATE 28.1 RETURN OF REGION 17869 ROTATION 4

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	21	17948	S10	E77	160	600	2.0										
81	10	22	17948	S10	E68	156	2000	2.0	22718	S12	E70	154	(AP)	4	H		1	AXX
81	10	23	17948	S10	E57	154	2000	2.0	22718	S13	E57	153	(AP)	3	B	30	2	CRO
81	10	24	17948	S11	E45	153	2000	2.0	22720	S03	E52	145	(AP)	2				
81	10	25	17948						22722	S10	E45	139	X	1	P	10	1	AXX
81	10	25	17948						22723	S15	E47	137	X	2	P	10	1	AXX
81	10	26	17948	S10	E20	152	2000	2.0										
81	10	29	17948	S10	W20	151	1800	1.5										
81	10	30	17948	S09	W33	152	2000	1.5										
81	10	31	17948	S10	W42	148	2000	1.5										
81	11	1	17948	S08	W55	147	1800	2.0	22735	S18	W58	150	(AP)	2				
81	11	2	17948	S09	W68	146	2000	2.5										
81	11	3	17948	S10	W81	146	700	2.0										

HALE REGION 17974 CMP DATE 29.0

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	31	17974	S25	W35	141	200	1.0										
81	11	1	17974	S25	W48	140	200	1.5	22736	S25	W48	140	B	2				
81	11	2	17974	S25	W61	139	400	2.0	22736	S23	W61	140	(AP)	3				
81	11	3	17974	S25	W74	139	200	2.0										

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HALE REGION 17954 CMP DATE 29.2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	23	17954	N07	E73	138	600	1.5										
81	10	24	17954	N07	E60	138	500	1.5										
81	10	26	17954	N07	E34	138	400	1.5										

HALE REGION 17957 CMP DATE 29.2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	26	17957	N13	E35	137	200	2.5		N14	E45				L	10	2	AXX
81	10	28	17957						22726	N14	E07	137	X	3	H	20	9	BXO
81	10	29	17957	N13	W06	137	500	2.5	22726	N14	W09	139	B	4	H	30	4	CRO
81	10	30	17957	N13	W18	137	500	2.5	22726	N11	W19	137	(B)	3	H	30	4	BXO
81	10	31	17957	N13	W33	139	600	2.0		N11	W34				H		1	AXX
81	11	1	17957	N13	W47	139	500	2.0										
81	11	2	17957	N13	W62	140	400	1.5										
81	11	3	17957	N13	W75	140	200	1.5		N10	W74				R	60	3	CAO

HALE REGION 17970 CMP DATE 29.3

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	30	17970	N09	W17	136	100	1.5		N11	W20				H	30	4	BXO
81	10	31	17970	N09	W29	135	100	1.0		N11	W34				H		1	AXX
81	11	1	17970	N09	W44	136	300	1.0	22734	N09	W45	137	AF	1				
81	11	2	17970	N08	W57	135	300	1.5	22734	N08	W56	135	(AF)	2				
81	11	3	17970	N08	W70	135	200	1.0		N10	W74				R	60	3	CAO

HALE REGION 17975 CMP DATE 29.6

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	31	17975	S17	W26	132	200	1.0										

HALE REGION 17976 CMP DATE 29.9

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	31	17976	S08	W22	128	100	1.0										

HALE REGION 17960 CMP DATE 30.3

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	27	17960							N16	E39				H	210	3	HKX
81	10	28	17960						22727	N13	E22	122	X	3	H	230	16	DAO
81	10	29	17960	N13	E07	124	700	2.5	22727	N13	E07	123	X	4	H	220	10	DKO
81	10	30	17960	N13	W04	123	700	2.5		N12	W05				H	20	6	BXO
81	10	31	17960	N13	W17	123	700	2.0		N12	W17				H	30	12	BXO
81	11	1	17960	N13	W30	122	700	2.5										
81	11	2	17960	N12	W44	122	900	2.5										
81	11	3	17960	N12	W58	123	700	2.5	22753	N07	W57	123	(AP)	3	H	10	2	BXO
81	11	4	17960	N12	W72	124	500	2.5	22753	N08	W75	127	(AP)	3	H	10	1	AXX

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HALE REGION 17985 CMP DATE 30.5

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	11	2	17985	S16 W43	121	300	2.0	22745	S15 W40	119	(B)	3				
81	11	3	17985	S16 W56	121	500	2.0	22745	S15 W52	118	(B)	3	H	10	2	BXO
81	11	4	17985	S16 W78	130	200	1.5	22745	S15 W68	120	(B)	2	B		1	AXX

HALE REGION 17955 CMP DATE 31.0 RETURN OF REGION 17876 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	24	17955	N14 E78	120	1800	2.5	22721	N15 E78	119	(AP)	3	H	310	1	HHX
81	10	25	17955					22721	N14 E64	120	(AP)	4	H	150	2	HKX
81	10	26	17955	N14 E55	117	2800	3.0	22721	N15 E51	120	(AP)	4	H	150	2	HHX
81	10	27	17955						N16 E39				H	210	3	HKX
81	10	28	17955					22721	N15 E27	117	BP	5	H	230	16	DAO
81	10	29	17955	N14 E17	114	3000	2.0	22721	N15 E12	118	AP	5	H	220	10	DKO
81	10	30	17955	N15 E05	114	3000	2.5	22721	N15 W01	119	(AP)	4	H	150	1	HKX
81	10	31	17955	N14 W07	113	2600	2.5	22721	N11 W15	120	(BY)	5	H	30	12	BXO
81	11	1	17955	N15 W20	112	2500	2.5	22721	N14 W27	119	(BP)	5				
81	11	2	17955	N15 W34	112	2500	3.0	22721	N14 W40	119	(BP)	5				
81	11	3	17955	N15 W47	112	2500	2.5	22721	N15 W51	117	(AP)	5	H	150	3	CSO
81	11	4	17955	N15 W60	112	2100	2.0	22721	N15 W66	118	(AP)	5	H	140	2	CSO

HALE REGION 17956 CMP DATE 31.2 RETURN OF REGION 17882 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	24	17956	N05 E79	119	600	2.0									
81	10	25	17956					22724	N04 E69	115	X	2	H	20	1	AXX
81	10	26	17956	N05 E57	115	1800	2.5		N08 E65				B	10	3	BXO
81	10	27	17956						N07 E54				H	20	3	HRX
81	10	29	17956	N06 E20	111	1400	2.0		N07 E26				H	50	7	DRO
81	10	30	17956	N06 E08	111	1500	2.0		N09 E12				H	20	3	CSO
81	10	31	17956	N06 W05	111	1700	2.0									
81	11	1	17956	N07 W19	111	1700	2.0	22737	N04 W25	117	X	1				
81	11	2	17956	N06 W32	110	1500	2.0									
81	11	3	17956	N06 W46	111	1500	2.0									
81	11	4	17956	N06 W59	111	1100	2.0									

HALE REGION 17959 CMP DATE 31.4

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	26	17959	S20 E63	109	200	2.0									

HALE REGION 17958 CMP DATE 31.5 RETURN OF REGION 17873 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	26	17958	S12 E66	106	1300	3.0									
81	10	29	17958	S12 E24	107	1100	2.5	22731	S12 E14	116	X	2				
81	10	30	17958	S10 E11	108	1000	2.5									
81	10	31	17958	S12 W02	108	900	2.0									
81	11	1	17958	S12 W15	107	1000	2.0	22738	S11 W17	109	(B)	2				
81	11	2	17958	S13 W27	105	1100	2.0									
81	11	3	17958	S13 W41	106	1200	2.0	22754	S12 W45	111	(AP)	2	H	10	2	BXO
81	11	4	17958	S13 W55	107	1000	2.0		S13 W65				B		1	AXX

REGIONS OF SOLAR ACTIVITY

OCTOBER 1981

HALE REGION 17973 CMP DATE 31.9

				CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	10	25	17973						22725	N08	E80	104	(AP)	4	H	20	1	AXX
81	10	26	17973						22725	N08	E68	103	(AF)	3	H		3	AXX
81	10	28	17973						22725	N07	E41	103	AF	3	H	10	1	AXX
81	10	29	17973						22725	N07	E24	106	X	3	H	50	7	DRO
81	10	30	17973	N14	E17	102	400	1.5	22725	N08	E12	106	(B)	3	H	20	3	CSO
81	10	31	17973	N14	E04	102	600	2.0	22725	N10	E01	104	(B)	2	H	10	6	BXO
81	11	1	17973	N14	W12	104	600	2.0	22725	N13	W14	106	(AF)	3				
81	11	2	17973	N13	W26	104	500	1.5	22746	N08	W25	104	(AF)	3				
81	11	3	17973	N13	W39	104	300	1.5	22746	N08	W38	104	B	1				

NOTE: No solar magnetograms were made at Kitt Peak National Observatory on October 1-4, 11, 12, 25, 27, and 28, 1981.
No Mt. Wilson sunspot data were available for October 1-3, 11, 12 and 27, 1981.

CONTIGUOUS PLAGES FOR OCTOBER 1981: Region 17901 merged with 17906 on October 13, 1981.

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

OCTOBER 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
01			LEAR				0017.6	0018.0	1				CONT
			LEAR				0040.0	0041.1	1				CONT
			LEAR				0042.7	0043.4	2				CONT
			LEAR				0051.9	0054.4	1				CONT
			PALE				0058.2	0059.8	2				CONT
			LEAR				0058.2	0100.1	1				CONT
			LEAR				0058.2	0100.1	1				CONT
			LEAR				0123.7	0124.9	2				V
			PALE				0123.7	0124.8	2				V
			LEAR				0204.0	0205.7	1				V
	1315	2255	HARV	1326	2255	1	1319	2255	1				INW
			HARV	1357	1358	2	1357	1358	2				IIIGG
	0555	1631	WEIS				1357.4	1358.3	1				IIIG
			HARV	1520	1522	2	1521	1522	2				IIIGG
			HARV				1542	1543	2				IIIB
			HARV				1616	1622	2				IIIGG
			HARV				1641		1				IIIB
02			LEAR				0032.7	0032.9	1				CONT
			LEAR				0636.3	0639.7	1				CONT
	0557	1454	WEIS				0636.4	0640.6	1				IIIG
			LEAR				0823.8	0827.4	1				CONT
			WEIS				0824.7	0825.8	1				IIIG
			LEAR				0841.4	0844.5	1				CONT
			WEIS				0841.4	0841.7	1				IIIB
			LEAR				0922.8	0924.6	1				CONT
			WEIS				0922.8	0925.7	1				IIIG
			WEIS				1317.4	1317.7	1				IIIB
	1324	2245	HARV	1352	1353	2	1352	1353	2				IIIG
			HARV				1426		1				IIIG
	1502	1627	WEIS										
			HARV				1905	2103	1				IN
			HARV				1956	2004	1				UNCL
			HARV	2118		1							I
			LEAR				2343.1	2345.2	1				CONT
03			LEAR				0050.9	0052.1	1				CONT
			LEAR				0143.5	0144.9	1				CONT
	0559	1624	WEIS				0821.3	0821.9	2				IIIG
			LEAR				0821.4	0822.0	1				CONT
			LEAR				0845.6	0848.6	1				CONT
			WEIS				0846.6	0849.6	2				IIIGG
			WEIS				1225.1	1227.1	1				IIIG
	1324	2330	HARV				1504	2318	1				INW
			HARV	1552		1							I
			HARV				1616		2				IIIGG
			HARV				1708	1709	2				IIIG
			HARV				1712	1720	2			II	
			HARV				1725	1742	2				IC
			HARV	1847		1							IIIB
			HARV	1900	1909	1	1900	1914	1				IIIGG
			HARV				1923	1926	2				IIIG
04			LEAR				0601.6	0602.0	1				CONT
			LEAR				0658.8	0659.1	2				CONT
	0600	1103	WEIS				0658.8	0659.1	2				IIIG
			WEIS				0852.4	0853.7	1				IIIG
			WEIS				1011.1	1012.3	1				IIIG
	1140	1404	WEIS				1229.2	1230.3	1				IIIG
	1324	2310	HARV				1346	1349	3				IIIGG
			WEIS				1346.6	1348.7	3				IIIGG
			HARV				1350	1353	1				IIIG
			WEIS				1350.5	1352.3	1				IIIG
			HARV				1451		1				IIIBW
	1511	1622	WEIS				1607.4	1607.5	1				IIIG
			HARV	1608	1610	1	1607	1610	2				IIIG,U
			WEIS				1609.4	1609.9	2				IIIG
			HARV				1613		1				IIIGW
			HARV				1711	1737	1				INW
			HARV				1737	1820	2				IC

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

OCTOBER 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
04			HARV				1757	1759	2				IIIG
			HARV				1821	2213	1				IN
			HARV				1932	1933	2				IIIG,U
			HARV				2029	2039	2				IIIGG
			PALE				2311.8	2322.6	1				B
			LEAR				2312.0	2316.6	2				CONT
			LEAR				2320.6	2325.5	1				CONT
05	0632	1329	WEIS				0740.7	0741.1	3				IIIB
			LEAR				0751.1	0754.6	1				CONT
			WEIS				0751.2	0751.7	1				IIIG
			WEIS				0754.1	0754.7	2				IIIG
			WEIS	0913.1	0913.8	2							IIIG
	1324	2250	HARV	1523		2							IIIG
	1526	1622	WEIS										
			HARV				1554		2				IIIB
			WEIS				1554.3	1554.6	1				IIIG
			HARV				1559	1601	3				IIIB
			WEIS				1559.7	1601.2	2				IIIG
			WEIS				1603.3	1605.0	2				IIIG,U
			HARV				1604	1605	3				IIIG
			HARV				1812		2				IIIB
			HARV				1816		2				IIIG
			HARV				1841	1842	3				IIIG,V
			PALE				1841.1	1842.0	1				III
			SGMR				1841.1	1841.5	1				V
			HARV	2027		1							IIIGV
			HARV				2030	2033	2				IIIGG
			LEAR				2321.5	2326.0	1				CONT
			LEAR				2321.5	2326.0	1				CONT
06			LEAR				0126.7	0127.1	1				CONT
			LEAR				0346.0	0346.3	1				CONT
			LEAR				0439.1	0439.5	1				CONT
			LEAR				0507.4	0508.1	1				CONT
			LEAR				0559.8	0600.2	1				CONT
	0602	1603	WEIS				0648.7	0649.1	1				IIIG
			LEAR				0704.6	0729.5	1				S
			WEIS				0706.7	0706.9	1				IIIG
			WEIS				0737.3	0737.4	1				IIIB
			LEAR				0828.9	0829.3	1				CONT
			WEIS				1116.1	1116.3	1				IIIB
	1324	2235	HARV				1342	2006	1				IIIN
			WEIS				1442.7	1442.9	2				IIIB
			HARV				1443	1445	3				IIIG
			HARV				1633	1634	2				IIIG
			HARV				1641	1642	2	1641	1642	1	IIIG
07			LEAR				0217.8	0219.5	1				CONT
			LEAR				0321.0	0321.6	1				CONT
			LEAR				0422.1	0422.8	1				CONT
			LEAR				0422.1	0422.8	1				CONT
			LEAR				0540.1	0544.2	1				CONT
			LEAR				0540.1	0544.2	1				CONT
			LEAR				0612.8	0618.9	2				CONT
			LEAR				0700.2	0701.1	1				CONT
			LEAR				0718.3	0718.7	1				CONT
	0701	1543	WEIS				0924.8	0926.4	2				IIIG
			LEAR				0924.8	0926.1	1				CONT
			WEIS				1023.4	1027.8	2				IIIGG
			WEIS				1033.8	1037.7	2				IIIGG
	1324	2258	HARV				1328	1330	3				IIIGG,V
			WEIS				1328.4	1330.7	2				IIIG
			SGMR				1328.6	0075.0	3				I
			HARV				1332	2238	2				IIIN
			HARV				1356	1358	1				I
			HARV				1459		3				IIIG
			WEIS				1459.3	1459.5	2				IIIG
			HARV				1501	1505	3				IIIGG
			WEIS				1503.2	1503.4	2				IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

OCTOBER 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
07			HARV				1601	1607	3	1606		2	IIIGG,V
	1557	1618	WEIS				1605.8	1606.7	1				IIIG
			HARV				1614	1616	3				IIIG
			HARV				1615	1800	2				I
			WEIS				1615.7	1616.0	2				IIIG
			HARV				1645		3	1645		2	IIIG
			HARV				1715	1716	3	1715	1716	2	IIIGG,V
			HARV				1800	2253	1				IN
			HARV				2155		2				IIIG
			HARV				2219	2220	2				IIIG
			LEAR				2225.8	2349.8	3			IV	
			HARV				2229	2230	2				IIIG
			HARV	2255		2	2256	2258	3				IIIGG
			PALE				2255.9	2257.9	1				V
			PALE				2300.4	2341.5	2			II	
08			LEAR				0053.8	0054.2	1				CONT
			LEAR				0053.8	0054.2	1				CONT
			LEAR				0139.7	0153.2	1				S
			LEAR				0139.7	0153.2	1				S
			LEAR				0200.8	0201.3	2				CONT
			LEAR				0200.8	0201.3	2				CONT
			PALE				0200.8	0201.1	1				CONT
			LEAR				0215.5	0216.1	1				CONT
			LEAR				0226.9	0229.6	3				CONT
			PALE				0227.2	0229.3	3				CONT
			LEAR				0324.8	0330.8	1				CONT
			LEAR				0347.0	0351.8	2				CONT
			LEAR				0629.5	0630.2	1				CONT
	0605	1556	WEIS				0636.9	0640.7	2				IIIG
			LEAR				0637.4	0640.9	2				CONT
			LEAR				0649.0	0651.0	1				CONT
			WEIS				0649.2	0650.4	2				IIIG
			LEAR				0806.4	0817.6	2				S
			WEIS				0806.6	0809.2	3				IIIGG/V
			WEIS				0811.0	0817.6	2				IIIGG
			WEIS				0954.7	0959.3	3				IIIGG
			LEAR				0955.0	0959.2	1				CONT
			WEIS				1014.8	1015.3	2				IIIG
			WEIS				1017.1	1017.4	1				IIIG
			WEIS				1033.0	1033.7	3				IIIG
			WEIS				1039.7	1040.2	1				IIIG
			WEIS				1100.9	1102.1	1				IIIG
			WEIS				1105.4	1106.9	1				IIIG
			WEIS				1143.3	1145.1	3				IIIG/V
			WEIS				1152.1	1153.2	3				IIIG
			WEIS				1155.1	1155.2	1				IIIB
			WEIS				1214.3	1214.9	3				IIIG
			WEIS				1233.1	1234.0	2				IIIG
			WEIS				1235.6	1235.8	2				IIIG
			WEIS				1238.0	1238.6	3				IIIG
			SGMR				1238.0	1238.2	1				III
			WEIS				1239.7	1240.2	2				IIIG
			WEIS				1258.3	1258.7	2				IIIG
			SGMR				1338.0	1238.2	1				III
			WEIS				1410.9	1411.0	1				IIIB
			WEIS				1413.6	1413.8	1				IIIB
			WEIS				1414.8	1416.4	1				IIIG
	1324	2310	HARV				1425						IIIBW
			WEIS				1505.4	1505.6	1				IIIB
			HARV				1508	1733	1				IN
			WEIS				1514	1526	1				I
			HARV	1532	2306	1							INW
			HARV				1652		2	1652		2	IIIG
			HARV				1753		2	1753		2	IIIG
			HARV				1909		2	1909		2	IIIG
			HARV				2051	2052	2				IIIG
			HARV	2153		2							IIIB
			HARV	2156		2	2156		2				IIIG
			HARV				2243		2				IIIG

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
08			HARV				2247		2				IIIG
			HARV	2258		1							IIIGW
			LEAR				2335.8	2336.5	1				CONT
09			LEAR				0113.9	0114.2	1				CONT
			LEAR				0234.4	0234.8	1				CONT
	0606	0630	WEIS										
			WEIS				0657.7	0705.3	2				IIIGG
			LEAR				0658.0	0704.6	1				CONT
	0637	1614	WEIS				0709	1542	1				IIIN
			LEAR				0712.4	0811.0	1				B
			LEAR				0906.4	0907.8	1				CONT
			WEIS				0906.4	0907.9	2				IIIG
			WEIS				1026.6	1028.9	3				IIIG
			WEIS				1302.2	1315.3	3				IIIGG
	1324	2245	HARV				1333	2243	2				IIIN
			WEIS				1411.7	1412.7	2				IIIG
			WEIS				1529.6	1533.8	3				IIIGG
			HARV	1530	1543	1	1530	1543	3	1530	1543	2	IIIGG
			SGMR				1530.2	1533.0	1				CONT
			WEIS				1542.6	1542.9	3				IIIG
			HARV	1603		3	1603		3				IIIG
			WEIS				1603.3	1603.7	2				IIIG
			HARV				1657	1659	2				IIIG
			HARV				1717	1718	3	1717	1718	3	IIIG
			PALE				1717.5	1746.5	1				S
			SGMR				1717.5	1718.4	1				CONT
			HARV				1746		3	1746		3	IIIG
			HARV				1810	1820	2	1810	1820	2	IC,IIIS
			HARV				1818	1825	2	1818	1825	2	IIIG
			PALE				1819.7	1824.3	2				CONT
			HARV	1830	1831	2	1830	1831	3	1830	1831	3	IIIGG
			PALE				1830.3	1831.3	3				V
			PALE				1847.8	1848.4	2				III
			HARV				1848		3	1848		3	IIIG
			HARV				1905	1915	2	1905	1915	2	IIIGG
			PALE				1923.7	1924.1	2				III
			HARV				1924		3	1924		3	IIIG
			PALE				1955.3	1955.8	1				III
			HARV	1959		1	1957	2003	2	1959	2003	2	IIIG
			PALE				2018.8	2023.3	1				CONT
			PALE				2037.5	2038.1	1				III
			PALE				2105.5	2223.8	1				S
			HARV				2116	2124	2				IIIGG
			LEAR				2328.3	2347.8	1				S
10			LEAR				0012.2	0022.0	1				CONT
			LEAR				0036.0	0056.8	1				S
			LEAR				0045.0	1008.0	1				B
			LEAR				0117.3	0123.0	1				CONT
			LEAR				0532.5	0534.9	2				V
			LEAR				0551.0	0552.3	2				CONT
	0608	1612	WEIS				0610	1609	1				IIIN
			LEAR				0746.0	0746.4	1				CONT
			WEIS				0746.1	0746.3	2				IIIG
	1339	2300	HARV				1339	1650	2				I
			HARV				1352	2234	2				IIIN
			HARV				1415		2				IIIG
			HARV				1419	1421	2				IIIG
			WEIS				1419.2	1421.7	2				IIIG
			WEIS				1435.7	1436.8	1				IIIG
			HARV				1526	1601	2				IIIS
			HARV				1631	1636	2	1632	1634	1	IIIGG
			HARV				1650	2300	2				IC
			HARV				1651	1706	2	1654	1702	2	IIIGG
			PALE				1721.7	1724.3	1				CONT
			SGMR				1721.7	1722.0	1				V
			HARV				1722	1724	3	1722	1724	3	IIIGG
			SGMR				1751.7	1752.0	1				V
			PALE				1753.8	1754.2	1				III

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				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
10			HARV				1754		2	1754		2	IIIG
			HARV				2002	2016	2	2005	2014	1	IIIGG
			PALE				2005.9	2016.5	1				S
			HARV				2209	2215	2				IIIGG
			PALE				2233.3	2234.4	1				CONT
			PALE				2317.4	2318.2	1				III
11			WEIS				0707.6	0708.1	1				IIIG
	0701	1610	WEIS				0711	1610	3				IIIS
			WEIS				0729.1	0729.7	2				IIIG
			WEIS				0929.3	0932.3	2				IIIG
	1339	2255	HARV	1345	2217	1	1339	1610	1				IN
			HARV	1359	2222	1	1339	2248	2				IIIN
			HARV				1405	1410	2				IIIGG
			HARV				1433	1434	2				IIIG
			HARV				1518	1546	2				IIIGG
			HARV	1550	1551	2							IIIG
			HARV				1556	1601	2	1558	1600	1	IIIGG
			HARV	1606	1818	1	1605	1835	2	1606	1835	2	IIIS
			HARV				1610	1840	2				I
			PALE				1657.3	1657.5	1				III
			HARV				1658	1659	3	1658	1659	2	IIIGG
			PALE				1752.8	1812.0	1				S
			SGMR				1758.2	1858.6	1				III
			HARV				1840	2100	1				IN
			HARV	1910	1912	1	1910	1913	3	1911	1912	2	IIIG,V,U
			PALE				1910.9	1911.0	2				V
			HARV				1916	1927	2			II	
			HARV	2025	2026	3	2025	2026	3				IIIGG
			PALE				2053.8	0236.8	1				B
			HARV				2100	2255	2				IC
			HARV				2101	2104	2				IIIG
			HARV				2108	2113	2				UNCL
			HARV				2123	2126	2	2126		1	IIIG
			HARV	2217	2255	2							I
12	0611	1608	WEIS				0613	1608	2				IN,DC
			WEIS				0616	1544	2				IIIS
			WEIS				0616.4	0617.8	1				IIIG
			WEIS				0624.7	0805	3			IV	DCIM
			WEIS				0625	1032	3			IV	
			WEIS				0625.8	0627.3	3				IIIG
			WEIS				1126	1608	2				PCONT
			SGMR				1132.5	1900.0	1				B
	1339	2400	HARV				1339	2400	3				IC,DC
			HARV	1347	2325	1							INW
			HARV				1640		2				IIIG
			HARV				1902		2	1902		2	IIIG
			HARV				1928	1929	2	1928	1929	2	IIIG
			HARV				2027		2	2027		2	IIIG
			HARV	2155	2157	2	2155	2157	2	2155	2157	1	IIIGG
			HARV				2324	2327	3				IIIGG
			HARV	2344	2348	2	2342	2348	2				IIIGG
			HARV				2353	2355	2				IIIGG,V
13	0759	1515	WEIS				0705	1607	2				IN,DC
	0657	0754	WEIS				0710.4	0715.1	3				IIIGG
	1540	1607	WEIS				0736	1515	2				IIIN
			WEIS				0946	1010	2				DCIM
			SGMR				1124.9	1125.7	1				CONT
	1340	2235	HARV				1340	2235	3				IC,DC
			WEIS				1410	1414	2				DCIM
			HARV	1410	1413	3	1410	1414	3				IIIGG
			HARV				1425	1938	2				IIIN
			WEIS				1555.7	1557.7	2				IIIG
			HARV	1556	1557	3	1556	1557	3	1556	1557	2	IIIGG,V
			HARV	1557	2235	1							INW
			HARV	1610	2138	1							IIIN
			HARV				1824	1840	2			II	
			HARV	1921	1923	2	1921	1923	2				IIIGG

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				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
13			HARV	2005	2012	3	2005	2011	3				DCIM
			HARV	2021	2035	3	2021	2035	3				DCIM
			HARV	2113		2	2113		2				IIIG
			HARV	2123	2126	3	2123	2126	3	2125	2126	2	IIIGG
14			LEAR				0455.7	1010.0	2				B
			WEIS				0636	1604	3				P,CONT
	0636	1604	WEIS				0637	1601	2				IN
			WEIS				1233.1	1233.4	2				IIIG
			WEIS	1307	1317	2							DCIM
	1339	2300	HARV				1339	1520	2				IC
			HARV	1348	1406	2	1355	1405	2				DCIM
			WEIS	1351	1403	2							DCIM
			SGMR				1354.6	1357.1	2				CONT
			HARV				1410	2257					IIIN
			WEIS				1456.3	1457.7	2				IIIG
			HARV	1457		1	1456	1457					IIIG
			HARV				1520	2300	3				IC
			HARV	1521	2245	1							INW
			HARV	1549	2300	2							III,DCIM,N
			HARV	1558		1	1558		2				IIIG
			HARV	1644	1645	3	1644	1645	3	1644	1645	3	IIIG
			PALE				1644.3	1644.7	2				V
			HARV	1705	1707	2	1705	1707	2				IIIG
			HARV	1706	1710	2						IV	
			HARV				1711	1719	2			II	
			PALE				1715.0	0351.0	1				B
			HARV							1716	2116	2	IIIN
			HARV	1719	1721	2	1719	1721	1				IIIGG
			HARV	1804	1807	2	1804	1806	2				IIIGG
			HARV	1842		2							IIIG
			HARV	1857	1900	2							IIIGG
			HARV	1955	1958	2							IIIGG
			HARV				2038		2				IIIG
			HARV				2046	2051	2	2046	2051	2	IIIGG
			HARV	2147	2151	3	2147	2151	2	2147	2151	1	IIIGG
			HARV				2153	2155	3	2153	2155	3	IIIG
			LEAR				2209.0	2307.4	1				B
			LEAR				2307.4	1010.0	2				B
15	0615	0755	WEIS				0616	1515	2				CONT
	0802	1602	WEIS				0626	1511	2				IN
			WEIS				0849.6	0852.4	2				IIIG
			WEIS				1252.7	1258.9	2				IIIGG
	1339	2400	HARV				1339	1820	3				IC
			HARV				1343	2317	2				IIIN
			HARV	1401	1402	2	1536	1402	2	1536	1400	2	IIIGG
			HARV							1415	1848	2	IIIN
			WEIS				1415.3	1415.5	2				IIIG
			WEIS				1530.7	1540.6	2				IIIGG
			HARV	1532		1	1530	1534	2	1532		2	IIIGG
			HARV				1723	1728	2	1723	1727	2	IIIGG
			HARV				1732	1733	2	1732	1733	2	IIIB
			HARV				1745	1747	2	1745	1747	2	IIIGG
			HARV				1820	2345	2				I
			HARV				1836	1837	2	1836	1837	2	IIIG
			HARV				1841	1844	2	1841	1844	2	IIIGG
			HARV				1933	1935	2	1933	1935	2	IIIGG
			HARV				1944	1946	2	1944	1946	2	IIIG
			HARV				2004	2005	2	2005		2	IIIG
			HARV	2017	2019	1	2015	2020	3	2016	2020	3	IIIGG,V
			HARV				2033	2045	3	2034	2045	3	IIIGG
			HARV				2048	2049	3	2048	2049	2	IIIGG
			HARV				2056		2				IIIG
			HARV				2339	2340	2				IIIG
16	0616	1600	WEIS				0638	1557	1				IIIN
			WEIS				0705	1556	1				IN
			WEIS				0826.5	0828.4	1				IIIG
			WEIS				1044.7	1100.5	2				IIIGG

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
16			WEIS				1132.9	1135.1	2				IIIGG
			WEIS	1214.7	1215.7	1							DCIM
			WEIS				1244.2	1248.6	3				IIIGG
			SGMR				1246.8	1248.3	1				CONT
			WEIS				1331.1	1331.5	2				IIIG
	1339	2355	HARV				1339	1640	2				IN
			HARV	1400		2	1400		2				IIIG
			HARV				1403	1404	2				IIIG
			HARV	1411	2309	1							IN
			HARV				1552		2	1552		1	IIIG
			HARV				1640	2020	3				I,DC
			HARV				1657	2248	2	1657	2022	2	IIIN
			HARV				1718	1719	2				IIIG
			HARV				1721	1722	2				IIIG
			HARV	1744	2024	1							IIIN
			HARV				1758	1800	2	1758	1800	2	IIIGG
			PALE				1759.0	1759.4	2				III
			SGMR				1849.7	1850.6	1				CONT
			PALE				1850.6	1853.7	2				CONT
			HARV	1851		1	1851	1855	2	1851	1855	2	IIIGG,V
			HARV				2001	2025	2	2001	2022	2	IIIS
			HARV				2020	2355	2				IC
			HARV				2034	2035	2				IIIG
			PALE				2034.8	2036.0	1				CONT
			HARV	2036	2051	2						IV	
			PALE				2058.0	0000.0	2				B
			PALE				2058.0	2215.0	2				B
			HARV				2155		2				IIIG
			LEAR				2207.0	0000.0	1				B
			LEAR				2207.0	0800.0	1				B
			LEAR				2207.0	0800.0	1				B
			PALE				2320.7	2321.3	1				III
			HARV				2321		2				IIIB
			PALE				2342.9	2343.1	2				III
			HARV				2343		2				IIIG
17			LEAR				0517.3	0518.1	2				CONT
	0735	0907	WEIS				0746	1555	2				IN
	0918	1558	WEIS				0936	1550	2				IIIN
			WEIS				1102.5	1103.7	3				IIIG
			WEIS				1112.2	1112.6	2				IIIB
			WEIS				1114.1	1115.5	2				IIIG
			WEIS				1301.3	1302.9	2				IIIG
			WEIS				1310.2	1310.3	2				IIIB
			WEIS				1324.9	1326.3	2				IIIG
			WEIS				1328.2	1328.7	2				IIIG
			WEIS				1337.4	1338.1	2				IIIG
	1339	2325	HARV				1352	1551	1				IN
			HARV				1355	2140	2				IIIN
			WEIS				1428.4	1428.7	2				IIIG
			WEIS				1442.7	1443.3	3				IIIG
			HARV	1443		1	1443	1444	2				IIIGG
			HARV				1453	1454	2				IIIGG
			WEIS				1453.3	1454.1	2				IIIG
			HARV				1551	1900	2				IC
			HARV	1555	2300	1							INW
			HARV				1625		2				IIIG
			HARV				1629	1631	2	1629		2	IIIG
			HARV				1706		2	1706		2	IIIG
			HARV				1709	1712	2	1709		2	IIIG
			HARV							1738	1926	2	IIIN
			HARV				1817		2	1817		2	IIIG
			HARV				1828		2	1828		2	IIIG
			PALE				1828.0	1828.2	1				III
			HARV				1835		2	1835		2	IIIG
			HARV				1900	2325	1				I
			HARV				1907	1912	2	1907	1912	2	IIIGG
			PALE				1908.9	1912.7	1				CONT
			PALE				2000.3	2010.2	2				CONT
			HARV				2007		2	2007		2	IIIG

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				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
17			HARV				2010		2	2010		2	IIIG
			HARV				2046	2047	2				IIIG
			HARV				2100		2				IIIG
			HARV				2143		2				IIIB
			LEAR				2206.0	1012.0	1				B
			HARV	2219	2220	3	2219	2220	2				IIIGG
			HARV	2234		2							IIIG
			HARV				2239	2240	2				IIIG
			PALE				2249.1	2249.6	2				III
			PALE				2309.3	2309.9	2				III
18	0619	1556	WEIS				0624	1555	2				IN,DC
			WEIS				0637	1541	1				IIIN
			LEAR				0713.3	0714.3	1				CONT
			LEAR				0741.5	0746.2	1				CONT
			WEIS				0836.6	0845.1	3				IIIGG
			LEAR				0837.3	0845.1	2				CONT
			LEAR				0837.3	0845.1	2				CONT
			WEIS				1105.0	1257.0	2				DCIM
			WEIS	1116	1225	3						IV	P
			WEIS				1117.6	1129.5	3				IIIGG
			WEIS				1118	1308	3			IV	
			SGMR				1158.6	0000.0	1				B
	1339	2340	HARV				1359	2340	2				I
			HARV	1505	1800	1							IN
	1600		HARV	1602	1606	1	1600	1607	2	1600	1607	2	IIIGG
			HARV				1626	2228	2				IIIN
			HARV							1723	2027	2	IIIN
			PALE				1723.1	1723.3	1				III
			HARV				1733	1737	2	1733	1737	2	IIIGG
			HARV	1739	1741	1	1739	1741	2	1739	1741	2	IIIGG
			PALE				1739.4	1741.8	1				CONT
			HARV	1756	2140	2						IV	
			HARV	1801		1	1801		2				IIIG
			HARV				1816		2	1816		2	IIIG
			HARV				1840	1841	2	1840	1841	2	IIIG
			PALE				1840.0	1841.2	1				CONT
			HARV				1851		2	1851		2	IIIG
			HARV				1905	1925	2	1905	1925	2	IIIGG
			PALE				1905.1	1909.8	2				CONT
			PALE				1918.7	1938.2	2				S
			PALE				2026.1	2026.6	1				III
			HARV				2100		2	2100		2	IIIG
			PALE				2329.5	2330.8	2				V
			LEAR				2329.6	2330.6	2				CONT
			HARV				2330	2331	2				IIIG
19			LEAR				0006.2	0007.9	2				CONT
			PALE				0006.3	0008.0	1				CONT
			LEAR				0101.8	0102.6	2				CONT
			LEAR				0410.5	0416.1	1				CONT
			LEAR				0410.5	0416.1	1				CONT
			LEAR				0625.7	0626.0	2				CONT
	0620	0746	WEIS				0627	1554	2				IN
	1007	1554	WEIS				0656.7	0657.2	3				IIIG
			LEAR				0656.8	0657.2	2				CONT
	0751	1002	WEIS				0703	1535	2				IIIN
			LEAR				0846.9	0847.6	2				CONT
			WEIS				0846.9	0847.6	2				IIIG
			WEIS				0920.8	0921.7	3				IIIG
			WEIS				0941.2	0941.8	2				IIIG
			WEIS				1034.0	1034.2	2				IIIB
			WEIS				1037.3	1037.6	2				IIIG
			WEIS				1122.7	1123.2	2				IIIG
			WEIS				1140.9	1141.4	3				IIIG
			SGMR				1141.1	1141.3	1				III
	1339	2238	HARV				1339	2030	2				I
			HARV	1345	2235	1							IN
			HARV				1407	2237	2				IIIN
			HARV	1601		1	1601	1602	2	1601	1602	2	IIIG,V

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

OCTOBER 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
19			HARV				1821	1823	2	1821	1823	2	IIIGG
			PALE				1821.3	1823.4	2				CONT
			HARV	1936	2120	2							IC
			HARV				2030	2238	3				IC
			HARV	2035	2037	3							I
			LEAR				2205.0	1012.0	1				B
			PALE				2231.0	0216.0	1				B
20			LEAR				0216.0	0216.7	2				CONT
			PALE				0216.0	0216.2	1				III
			LEAR				0227.3	0234.2	2				CONT
			WEIS				0636	1552	1				IN
	0623	1552	WEIS				0723	1550	2				IIIN
			WEIS				1224.7	1226.3	2				IIIG
			WEIS				1309.0	1310.8	2				IIIG
			WEIS				1320.0	1321.5	2				IIIG
			HARV				1344	2223	2				IIIN
	1340	2235	HARV	1345	2232	1	1340	2235	2				I
			HARV	1350	1351	2							IIIG
			HARV	1422	1438	2						IV	
			HARV	1450	1451	2							IIIG
			HARV	1501	1505	1	1503	1527	2	1505	1520	1	IIIS
			HARV				1547	1548	2	1547		1	IIIG
			HARV							1554	1933	2	IIIN
			HARV				1557	1558	3	1557	1558	2	IIIG
			HARV	1651	1652	2	1651	1652	2				IIIG
			HARV				1659	1703	2	1659	1703	2	IIIG
			HARV	1808	1809	3	1809	1810	2	1809	1810	2	IIIGG,V
			PALE				1905.4	1938.2	2				S
			HARV				1938		2	1938		2	IIIG
			HARV				2030	2031	2	2030	2031	2	IIIG
			PALE				2055.8	2056.2	1				III
			HARV				2056		2	2056		2	IIIG
			PALE				2123.7	2133.3	1				CONT
			HARV				2133	2134	2				IIIG
			LEAR				2240.0	0657.0	1				B
21			PALE				0017.0	0017.4	1				III
			LEAR				0209.8	0210.5	3				CONT
			PALE				0210.1	0223.4	2				CONT
			LEAR				0222.7	0224.8	3				CONT
			LEAR				0334.5	0341.3	2				CONT
			LEAR				0353.1	0359.4	2				CONT
	0617	1037	WEIS				0640	1307	1				IIIN
	1044	1310	WEIS				0642	1248	1				IN
			WEIS	0739.3	0739.9	2							DCIM
	1339	2250	HARV				1339	1726	1				IN
			HARV	1340	2118	1							INW
			HARV				1554	1859	1	1724	1852	1	IIIN
			HARV				1726	1826	2				I
			HARV				1826	2250	1				IN
			HARV	2133		3	2130	2133	3				IIIGG
22	0630	1636	WEIS				0940.4	0940.6	1				IIIB
			WEIS				0943.8	0946.7	2				IIIGG
			WEIS				0945.2	0945.8	2				DCIM
	1339	2240	HARV				1403	1404	2				IIIG
			HARV				1407	1409	1				IIIGW
			HARV				1410	1430	1				INW
			HARV				1422	1423	1				IIIG
			HARV				1915	2238	1				IN
			HARV				2139	2141	2	2139	2141	1	IIIG
			HARV				2213	2214	2				IIIB
			HARV	2232		1	2232		1				IIIBW
23	0617	1104	WEIS				0715	1429	2				IN,DC
	1339	2320	HARV				1342	1405	2				I
			HARV	1342	1900	1							IN
			HARV	1345		1	1345		1				IIIG
	1108	1546	WEIS				1347.8	1348.7	2				IIIGG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

OCTOBER 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
23			HARV	1348	1349	2	1348	1349	3				IIIGG
			HARV				1405	1537	2				IC
			HARV				1407	1929	2				IIIN
			HARV				1537	2320	1				IN
			HARV				1603	1604	2				IIIG
			HARV	1902	2207	1							I
			HARV				2106	2122	3				IIIGG
			PALE				2106.1	2109.7	1				CONT
			HARV				2314		2				IIIG
			PALE				2314.2	2314.5	1				III
			PALE				2339.7	2339.9	1				III
24			PALE				0041.8	0049.1	1				CONT
			PALE				0130.8	0131.3	2				III
			PALE				0141.7	0141.8	1				III
	0823	1543	WEIS				0834.0	0835.9	1				IIIGG
			WEIS				0846.4	0846.8	2				IIIG
			WEIS				0903.1	0903.2	1				IIIB
			WEIS				0925.4	0925.6	1				IIIG
			WEIS				0956.1	0959.1	2				IIIG
			WEIS				1002.8	1002.9	2				IIIG
			WEIS				1005.5	1005.7	2				IIIG
			WEIS				1016.6	1017.9	2				IIIG
			WEIS				1021.3	1021.7	2				IIIG
			WEIS				1102.8	1103.0	1				IIIG
			WEIS				1124.1	1124.4	2				IIIG
			WEIS				1150.7	1151.1	1				IIIG
			WEIS				1332.2	1332.4	2				IIIG
			WEIS				1333.8	1334.2	2				IIIG
			WEIS				1336.2	1338.1	2				IIIGG,RS
	1339	2250	HARV	1343	2250	1							IN
			HARV	1434	1437	1	1434	1446	1				IIIGG
			HARV				1804		1				IIIBW
			HARV	1814	1816	1	1814	1816	2				IIIG
			HARV	1825		3	1825		3				IIIGG
			HARV				1833	2244	1				IN
			HARV	1914		1	1914		1				IIIGW
			HARV	1919		2	1919		2				IIIG
			HARV				2043	2044	2				IIIG
			PALE				2043.3	2044.1	2				V
			HARV	2103	2108	2	2104	2108	2				UNCL
			HARV	2127		1	2127		1				IIIBW
			HARV	2143		1	2143		1				IIIGW
			HARV	2148	2153	1	2148	2153	1				IIIGW
			PALE				2339.7	2339.9	1				III
25	0736	0926	WEIS				0821.7	0822.2	1				IIIG
			WEIS				0836.3	0836.7	1				U
	0929	1542	WEIS	0939.2	0939.4	1							IIIG
			WEIS				1023.8	1026.3	2				DCIM
	1339	2350	HARV	1412	2315	1							IN
			HARV	1432	1442	3	1435	1442	2				IIIGG
			HARV				1634		2	1634		2	IIIG
			HARV				1654	1921	1				INW
			HARV	1717		1							IIIB
			HARV				1725		1				IIIBW
			HARV				1952		2	1952		2	IIIB
			HARV	2140	2141	2	2140	2141	1				IIIG
			HARV	2148	2149	1	2148	2149	2				IIIG
			HARV	2152		2	2152		1				IIIG
			HARV	2316	2317	3	2316	2317	2				IIIG
			HARV				2347	2348	2				IIIG
26	0631	1541	WEIS										
	1339	2350	HARV				1416		1				IIIB
			HARV				1617		1				IIIB
			HARV	1701	1702	1	1701	1702	2				IIIG
			HARV	1713		1							IIIBW
			HARV				2039	2040	2				IIIG
			HARV				2058		1				IIIBW

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

OCTOBER 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
26			HARV				2104		2				IIIG
27	0643	1057	WEIS				0657.6	0657.8	1				IIIB
			WEIS				0717.1	0720.2	2				DCIMU
			WEIS				0727.4	0727.8	2				IIIG
			WEIS				1020.6	1022.6	2				DCIM
			WEIS				1020.8	1023.7	3				IIIGG
			WEIS				1036.2	1038.4	1			II	
	1102	1538	WEIS				1145.9	1146.6	1				IIIG
			WEIS				1219.3	1222.2	3				IIIG,U
			WEIS				1247.3	1247.8	2				IIIG
			WEIS				1302.2	1305.4	2				IIIG
	1338	2350	HARV	1341	1346	2	1341	1347	3				IIIGG
			WEIS				1341.0	1345.2	3				IIIGG
			HARV	1426	1431	2	1427	1431	2				IIIGG
			WEIS				1427.8	1429.8	2				IIIG
			HARV				1619	1620	2				IIIG
			HARV	1623	1651	1	1627	1655	1				IIIGG,W
			HARV	1700	1704	2	1700	1705	3	1700	1705	3	IIIGG,V
			HARV				1824	1837	3	1824	1837	3	IIIGG
			HARV	1831	1907	2	1831	1907	2			IV	
			PALE				1831.5	1837.2	2				CONT
			HARV				1858	1859	1				IIIB
			PALE				2113.9	2114.8	1				III
			HARV				2114	2115	2	2114	2115	2	IIIG
			HARV				2121	2122	2				IIIG
			HARV	2230		1	2230		2				IIIG,U
			HARV				2243	2244	2				IIIG,U
28			LEAR				0042.0	0042.5	1				CONT
			LEAR				0042.0	0042.5	1				CONT
	0637	0700	WEIS				0644.7	0647.3	2				IIIG
	0742	1537	WEIS				1026.3	1026.7	2				IIIG
			WEIS				1211.4	1211.8	2				U
	1339	2350	HARV				1612		2				IIIG,U
			HARV				1624	1627	2				IIIGG,U
			HARV				1635		2				IIIB
			HARV				1735		2				IIIG
			HARV				1746		2				IIIG
			HARV				1817		2				IIIB
			HARV				1820	1821	2				IIIB
			HARV				1829		2				IIIB
			HARV				2009		2				IIIG,U
			HARV	2306		1							IIIG
			LEAR				2344.8	2346.5	1				CONT
29			LEAR				0303.5	0304.3	1				CONT
			LEAR				0510.5	0510.8	1				CONT
			LEAR				0611.9	0613.1	1				CONT
			LEAR				0628.0	0629.5	1				CONT
			LEAR				0628.0	0629.5	1				CONT
	0646	1217	WEIS				0701.3	0701.5	1				IIIB
			LEAR				0701.4	0701.7	1				CONT
			WEIS				0707.4	0707.7	1				IIIG
			LEAR				0707.5	0708.1	2				CONT
			LEAR				0718.9	0759.0	1				S
			LEAR				0718.9	0000.0	1				S
			WEIS				0938.7	0939.3	2				IIIG
	1228	1301	WEIS				1153.6	1255.5	3				IIIG
			WEIS				1158.4	1158.8	2				IIIG
	1339	2350	HARV				1523		1				IIIB
	1415	1535	WEIS				1526.7	1526.8	1				IIIB
			HARV				1527		1				IIIB
			HARV				1535	1536	2				IIIB
			HARV				1625		2				IIIB
			HARV	1706		1	1706	1707	3				IIIG,V
			HARV				1859	1900	2				IIIG
			HARV				1910		2				IIIG
			HARV				1951	2003	2	1952	1957	1	IIIGG
			HARV	2006		1	2005	2008	3	2005	2006	2	IIIGG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

OCTOBER 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
29			HARV				2009	2012	2				IIIG
			HARV				2226		2				IIIG
			LEAR				2354.0	2356.5	1				CONT
30			LEAR				0224.6	0225.7	1				CONT
			LEAR				0552.5	0553.1	1				CONT
			LEAR				0552.5	0553.1	1				CONT
	0641	1533	WEIS				1050.3	1050.7	2				IIIG
			WEIS				1305.2	1306.1	3				IIIG,U
	1339	2350	HARV	1330		1	1350		1				IIIGW
			WEIS				1330.9	1331.2	2				IIIG
			WEIS				1353.9	1354.2	1				IIIG
			HARV				1354		3				IIIG
			HARV				1529		2				IIIB
			HARV				1549	1550	2				IIIG,U
			HARV				1652		1				IIIB
			HARV				1713		2				IIIG
			HARV	1820		1	1820		1				IIIGW
			HARV				1906		1				IIIBW
			HARV				2047		2				IIIG
31			LEAR				0147.7	0148.0	2				CONT
			LEAR				0604.8	0608.4	1				CONT
			LEAR				0604.8	0608.4	1				CONT
			LEAR				0734.6	0734.9	1				CONT
			LEAR				0747.2	0835.4	1				B
			LEAR				0838.4	0839.8	1				CONT
	0641	1528	WEIS				0931.2	0933.2	2				IIIG
			LEAR				0931.5	0933.3	1				CONT
			WEIS				0937.2	0937.4	1				IIIB
	1339	2350	HARV				1359	1400	2				IIIG
			HARV				1719	1720	2				IIIG
			HARV				1725	1726	3				IIIG
			HARV	1735		1	1735		1				IIIGW
			HARV				1741		1				IIIGW
			HARV				1818	1819	2	1818	1819	2	IIIG
			HARV				1831		2	1831		2	IIIG
			HARV	1839	1840	1	1839	1840	1				IIIG
			HARV				1851	1852	2	1851	1852	2	IIIG
			PALE				1851.4	1851.5	1				III
			PALE				1851.4	1851.5	1				III
			HARV				1919	1920	2				IIIG
			PALE				2033.7	2033.9	1				III
			PALE				2033.7	2033.9	1				III
			HARV				2118	2120	2				IIIG
			HARV				2125		1				IIIG
			HARV				2309		2				IIIG
			HARV				2319	2320	2				IIIG
			LEAR				2353.2	2353.5	1				CONT

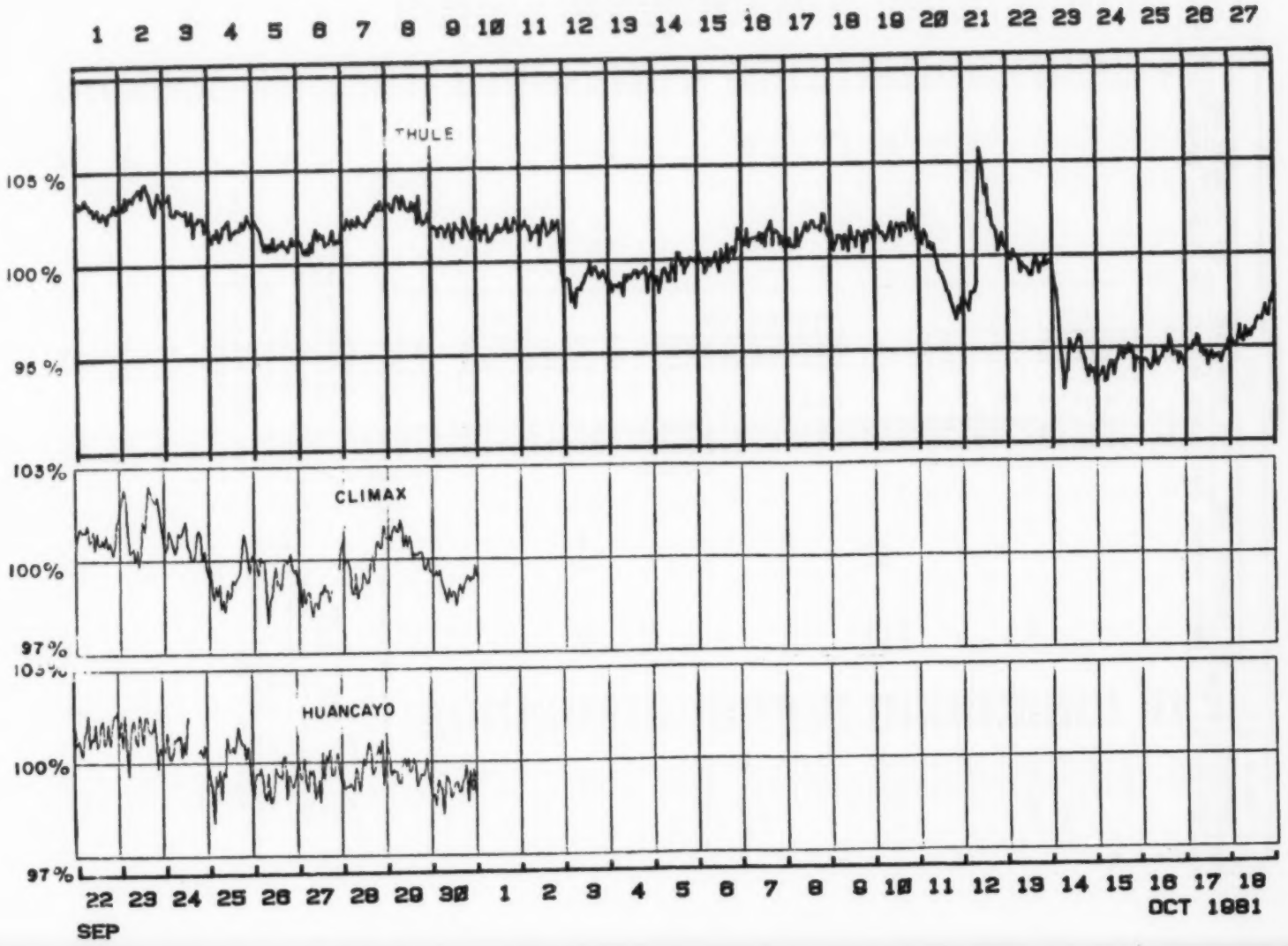
The symbols used under the column heading SPECTRAL TYPE have the following definitions:

B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of burst
C = Underlying continuum (particularly with Type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III

RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity
DCIM = Fast drift

COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2025

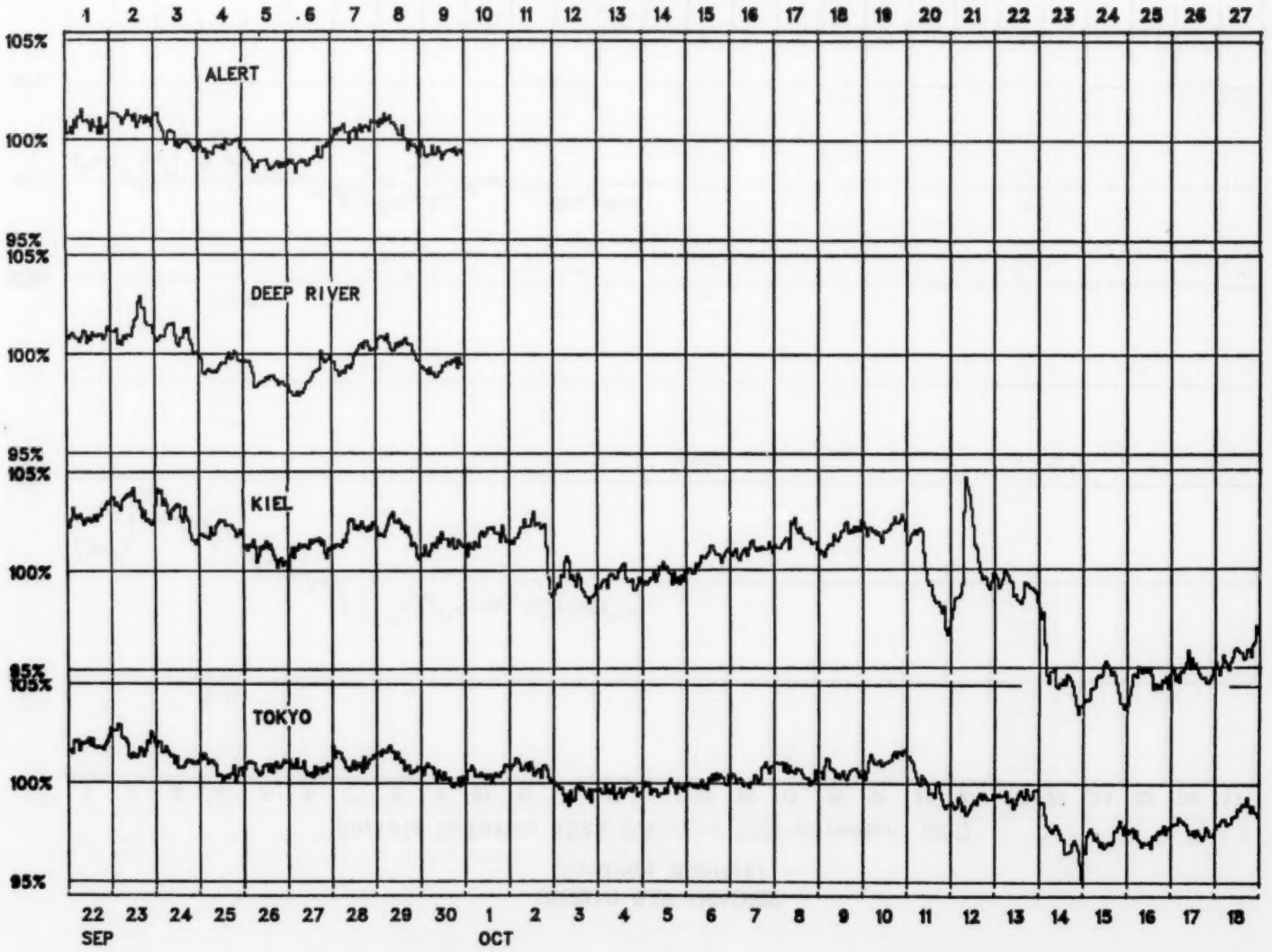


22 23 24 25 26 27 28 29 30 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

SEP OCT 1981

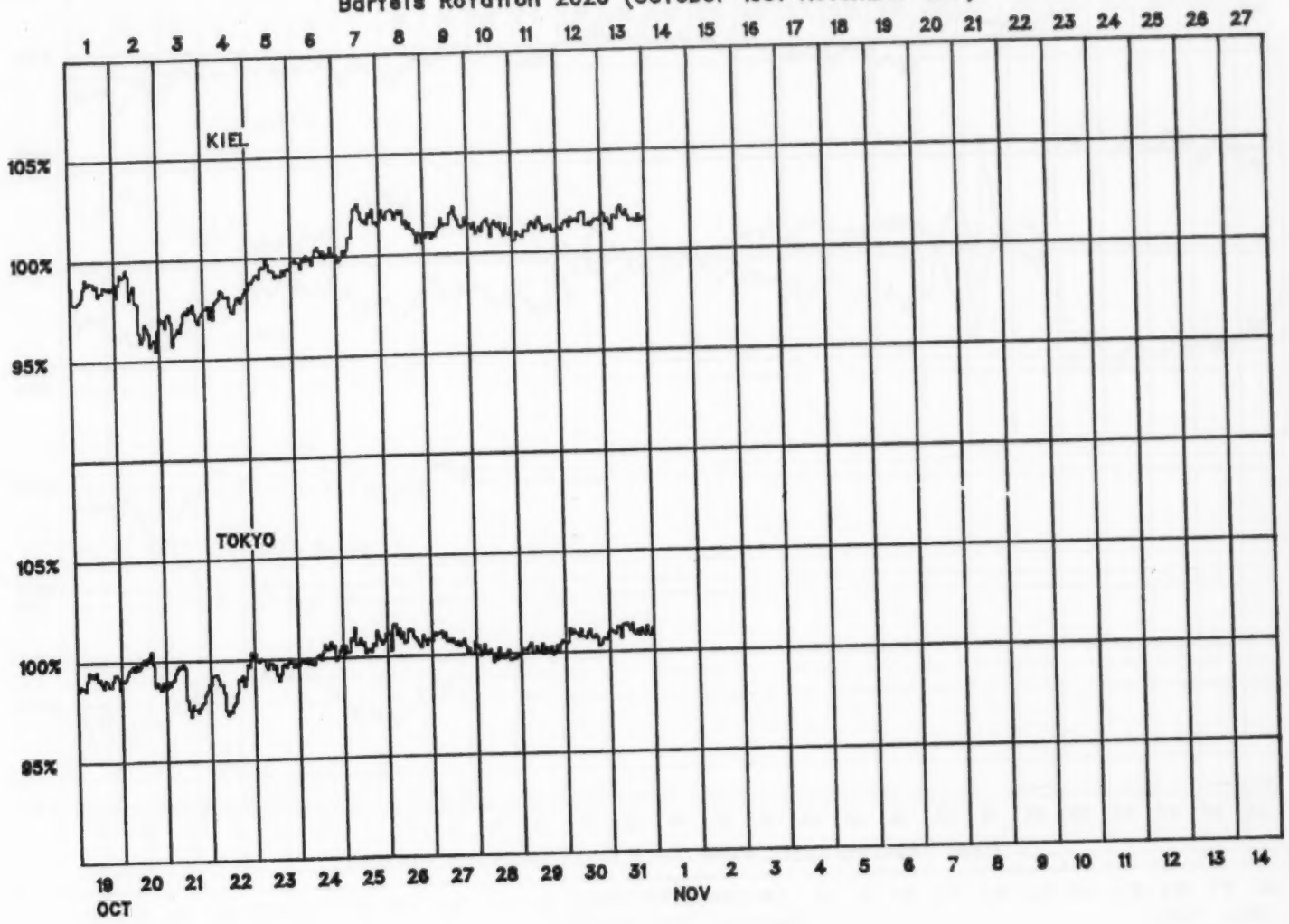
COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2025 (September 1981–October 1981)



COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2026 (October 1981–November 1981)



COSMIC RAY INDICES

(Neutron Monitors)

OCTOBER 1981

Oct 1981	THULE Average (cts/h)/100	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	KIEL Average (cts/h)/100	CLIMAX Average (cts/h)/100	TOKYO Average (cts/h)/100	HUANCAYO Average (cts/h)/100)
1	4100	6657.5	6272.2	5695.7		3524.7	
2	4091	6662.7	6282.0	5697.2		3532.2	
3	3989	6509.0	6095.9	5564.2		3490.8	
4	3989	6504.1	6110.1	5576.6		3492.5	
5	4010	6503.3	6154.0	5585.8		3498.0	
6	4037	6564.0	6191.6	5634.6		3509.8	
7	4076	6630.2	6230.7	5658.9		3519.3	
8	4087	6651.1	6286.2	5691.3		3528.4	
9	4071	6653.3	6270.3	5694.8		3528.5	
10	4090	6660.1	6299.8	5720.1		3548.8	
11	3992	6488.8	6149.9	5585.8		3505.4	
12	4068	6592.8	6225.7	5622.2		3474.1	
13	4014	6505.1	6145.8	5551.8		3485.5	
14	3820	6170.6	5824.0	5301.0		3414.8	
15	3798	6149.3	5776.9	5272.5		3412.8	
16	3810	6174.3	5813.8	5288.2		3416.0	
17	3823	6184.7	5845.2	5310.4		3427.1	
18	3877	6273.0	5907.7	5358.8		3453.6	
19	3923	6360.9	6011.4(23)	5447.2		3470.3	
20	3875	6297.6	5997.9(23)	5394.3		3486.0	
21	3843	6258.4	5881.0	5362.5		3452.5	
22	3856	6274.7	5942.5	5410.0		3460.4	
23	3920	6370.2	6001.6	5487.0		3494.0	
24	3968	6446.4	6080.3	5529.0		3508.4	
25	4006	6515.8	6138.6	5601.3		3527.2	
26	4030	6552.3	6172.6	5620.4		3537.0	
27	4031	6544.9	6138.5	5607.6		3527.2	
28	4026	6535.1	6152.3	5599.7		3503.0	
29	4012	6521.8	6160.7	5591.0		3511.0	
30	4021	6548.6	6179.6	5611.2		3531.0	
31	4043	6571.8	6203.9	5620.3		3540.5	
MEAN	3977	6462.4	6095.0	5538.4		3493.9	

For less than 24-hour coverage, parentheses enclose the number of hours for which data are available. For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

GEOMAGNETIC ACTIVITY INDICES

OCTOBER 1981

Day	Three-Hourly Indices Kp									Ap	Cp	Three-Hourly Indices Km								Am	aa			
		1	2	3	4	5	6	7	8	Sum			1	2	3	4	5	6	7	8		N	S	M
1	Q6A	2+	2+	2-	2+	3-	3-	1+	3-	18	9	0.5	2	2-	1+	2	3-	2+	1+	3-	16	17	23	18 22
2		3+	2+	2-	2	3	3-	5+	3+	25-	22	1.1	3	2-	1+	2-	3	3-	6-	3+	33	41	32	18 55
3	D5	2+	3	5-	6-	6-	5-	4+	4-	34	36	1.4	2+	3+	4	5-	5	4	4	3+	53	50	72	59 62
4		3-	4	3+	4-	3	3-	4-	2	25	17	0.9	2+	3+	3	3	3+	3-	3+	2-	28	31	29	30 30
5	Q4A	2	1+	2+	3+	2-	1-	0+	1+	13	7	0.3	2-	1+	2+	2+	2-	1-	0+	1+	11	14	10	15 9 C
6	Q2	0+	0+	1	2+	3-	2	1	2	12-	6	0.3	0+	0+	1-	2-	3-	2+	1	2-	10	16	15	10 21
7		4-	3+	3-	4	3+	4	6+	5-	32	32	1.3	3+	2+	2+	3+	3+	3+	5+	4-	42	50	44	28 66
8		4-	4+	5	4+	3-	3	3+	4-	30	25	1.2	3+	4-	4	4+	3	3-	3+	3+	41	36	46	54 29
9		4	5-	3+	4+	3-	3	3	3-	28-	21	1.1	3+	4-	3-	3+	2+	3	3-	3-	31	32	31	41 22
10		2	3+	3+	4-	4-	5	5	4+	30+	27	1.2	2	3	3+	3+	3	4+	4+	4-	39	46	37	23 60
11	D4	5-	6-	6-	5	5+	5+	3	3+	38	46	1.5	4-	4-	5-	5-	5	5-	3	3	59	54	63	66 50
12	Q9A	4-	4	4	3-	0+	0+	0+	1-	16	12	0.7	3	3	4-	3-	0+	0+	0+	1	18	16	18	29 5
13		2-	1+	3	2+	2+	2+	3+	6-	22	17	0.9	2-	1+	3-	2-	2	3-	3	5	28	26	25	16 34
14	D2	5	8-	4+	4-	3+	4-	5-	6-	41	73	1.8	7+	6+	4	3	3	3+	4	5+	102	90	83	122 52
15		3	4	4-	3+	4+	4-	3-	3-	27+	20	1.0	3	3+	3+	3	4-	3+	3-	3	33	25	35	22 38
16	Q5A	2-	3+	3	1+	1	1-	1	1+	13+	8	0.4	2	3+	2+	2-	1+	1-	2-	2-	15	13	16	20 9
17		1	2+	4	4+	4-	4	3+	2	25-	18	1.0	1+	3-	4	4-	3	4-	3	2+	33	35	30	35 29
18	Q3K	3	1+	1+	1	1-	2	2-	2-	13-	6	0.3	3-	1	1	1-	0	2-	2	2-	10	13	9	11 11 K
19		3-	4-	4	4	4+	3+	4-	4	30-	23	1.1	2+	3	3+	4-	4	3-	3+	3+	36	38	31	31 39
20	D3	4	4-	3+	5-	7-	7	7	5+	42-	67	1.7	3	3	3	4+	6-	6+	7-	5-	93	73	75	32 116
21		5+	5-	4-	5	3+	4	2+	3+	33-	33	1.3	5-	4+	4-	5-	3	3+	2	3	46	45	46	59 32
22	D1	4-	4	4	5	7	7-	6+	7-	43+	72	1.8	3	4-	4-	5	6	6	5+	6-	101	95	87	49 133
23		6-	4+	5	3+	2+	3	3-	3-	29	27	1.2	5-	4-	4+	3+	2+	3	3	3	41	36	48	56 29
24		1-	0+	1+	3+	4-	5	3+	4	22-	18	1.0	1-	1-	1	3+	4-	5-	4-	4	33	25	36	15 47
25		3-	5-	4+	3+	3+	2+	2	2-	24+	18	1.0	2	3+	4-	3	3+	2+	2	2-	26	23	32	34 22
26	Q7A	2-	2-	3+	3+	3-	2	1+	2-	18-	10	0.5	2	2	3	3	3-	3-	2-	2	21	22	33	28 27
27	Q8A	2+	1	2-	2-	3-	3	3-	3	18	10	0.6	2-	1	2-	1+	3-	3	3-	3-	18	21	18	14 25
28		2+	2+	4-	3+	3	3-	4+	4+	26	19	1.0	3-	3-	3	3	3	3	4	4	33	39	30	21 48
29	Q8A	2+	3-	3-	3+	2-	2	2-	4-	20	12	0.7	2+	2+	2+	3-	2-	2	2-	4-	20	31	22	31 22
30		2+	2+	2	3-	4-	4-	2	2+	21	12	0.7	2	2+	2-	2+	4-	3	2	2+	22	21	21	17 25
31	Q1	2	0+	1+	2-	2-	1	1-	1-	9+	4	0.2	2-	0	1	1	2-	2-	1+	1	8	8	9	9 8 C
									Mean		23	0.96									35.5	34.9	35.7	35.3

Day	Three-Hourly Indices Kn								An	Three-Hourly Indices Ks								As
	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	
1	2	2-	1+	2	3-	2	1+	3-	16	2+	2-	1+	2-	3-	3-	1+	2+	16
2	3-	2-	1+	2-	3	3	6-	3+	34	3+	2-	1	1+	3	3-	5+	3+	33
3	2	3-	4	5-	5-	4+	4	3	52	3-	4-	4+	5-	5	4-	4	3+	54
4	2+	4-	3	3	3+	2+	3+	2-	28	2+	3+	3	3	3+	3	3+	2	28
5	2-	1+	2+	2+	2-	1-	1-	2-	11	2	1+	2	2+	2-	0+	0	1+	10
6	0+	0+	0+	2-	2+	2+	1+	2-	10	1-	0+	1-	2-	3-	2+	1	2	11
7	3	2+	3-	3+	4-	3+	5+	4	43	3+	2+	2+	3+	3+	3+	5	4-	41
8	3	4-	4	4+	3	3-	3+	3+	42	3+	4	4	4	3-	3-	3+	3+	40
9	3+	4-	3-	3+	3-	3+	3-	3-	31	4-	4	3	3+	2+	3-	3-	2+	31
10	2-	3	3+	3	3	4+	4+	4-	39	2+	3-	3	3+	3	4+	4+	4-	40
11	4-	4	5	5-	5-	4+	3-	3	60	4-	3+	5-	5-	5	5-	3	3+	58
12	3	3	3+	3-	0+	0+	0+	1+	17	3+	3	4-	3	0	0	0	1	19
13	2-	1+	3-	2	2	2+	3-	5-	25	1+	2-	3-	2-	2	3-	3+	6-	32
14	7	6+	4	3-	3	3+	4	5	90	8-	7-	4+	3	3	3+	4	6-	113
15	3-	3+	3+	3	4	3	3-	3-	33	3	3+	3	3-	4-	3+	3-	3	32
16	2-	3+	2+	2-	1	1-	1	1+	14	2+	3+	3-	2-	1+	1	2	2	16
17	1+	2+	4-	4-	3	4-	3	2+	31	2-	3-	4	4	3+	3+	3	3-	34
18	3-	1	1+	1-	0+	2	2	2-	11	3	1	1-	0+	0	2-	2-	2-	10
19	2	3	3	4-	4	3	3+	4-	35	2+	3+	4-	4-	4	3-	3	3+	36
20	3	3-	3	4+	6-	6	6+	4+	85	3-	3	3-	4+	6-	6+	7-	5	100
21	4+	4+	4-	5-	3	4-	2	3	45	5-	4+	4-	5-	3	3+	2-	3	47
22	3	3	4-	5	6	5+	5	6-	86	3	4+	4-	5+	5+	7-	6-	6	116
23	5-	4-	4+	3+	2+	3	3-	3	40	5	4-	4	3+	2	3	3	3-	42
24	1-	0+	1	3	4	5-	4-	3+	33	1-	1	1-	4-	4-	4+	3+	4+	34
25	2+	3+	4-	3+	4-	3-	2	1+	28	2	3+	4-	3-	3	2+	2	2	25
26	2-	2-	3	3	3-	2+	2-	2	19	2	3-	3	3+	3-	3-	2	2+	23
27	2-	1-	1+	1+	2+	3+	2+	3-	17	2-	1+	2-	1+	3-	3	3-	3	19
28	2	2	3	3-	3-	3	4	4	32	3	3	3-	3	3	3	4	4-	34
29	2	2	2+	3-	2-	2	1+	4-	19	3-	3-	2+	3-	2-	2	2	3+	22
30	1+	2	1+	2+	4	3+	2-	2	21	2+	3-	2	3-	3+	3	2+	3-	23
31	1+	0	1	1	2-	2	1	1	8	2	0+	1-	1	2-	2-	1+	1+	9
								Mean	34.0									37.8

ERRATA:

Conversion in 1979 to a new computer with a different word size caused values of indices aa to be truncated if they exceeded 99; the machine read and printed only the two least significant digits. Correct values of the affected indices are listed below. Both half-daily values are given, too, to make clear which of the two entries should be corrected.

Date	N	S	M
21 Feb 1979			66 102
10 Mar			54 101
25 Apr	109		27 148
26 Apr			103 15
13 Aug			53 108
20 Aug			33 100
29 Aug			59 111
18 Sep			100 63
25 Jul 1980			13 100
19 Dec	118	123	63 178
06 Feb 1981			24 116

NOTE:

aa indices are provisional from 1 January 1981 until further notice, in connection with the change of the Southern Hemisphere observatory.

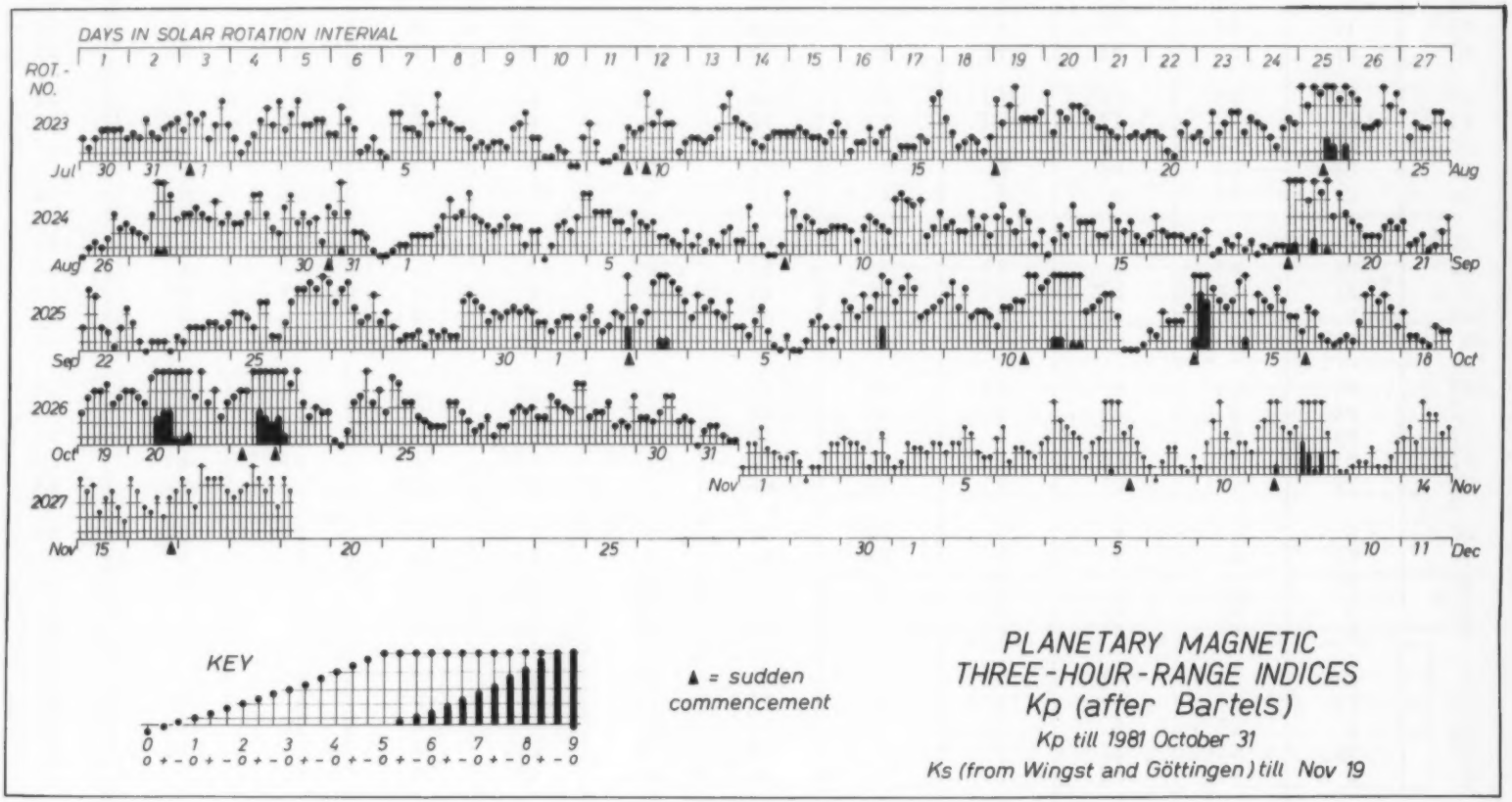
Quiet days (Q) and disturbed days (D), geomagnetic planetary three-hour-range indices (Kp) (integers alone are equivalent to those normally given with a small zero), magnetic character figures (Cp), and average amplitude (Ap) (unit 2 nT) prepared by Geophysikalisches Institut at the University of Göttingen, F.R. of Germany for the International Service of Geomagnetic Indices. Ten most quiet days [Q1-Q0(10)] and five most disturbed days [D1-D5] are ordered from most quiet or disturbed, respectively. A or K means "not really quiet" (A = "Ap>6", K = "Ap≤6 but one Kp>30 or two Kp values≥3+"). An asterisk means "not really disturbed" (Ap<20).

Geomagnetic three-hourly indices Km, Kn, Ks, daily mean values Am, An, As (unit 1nT), and indices aa are prepared by M. Menvielle of the Institut de Physique du Globe, Paris, France. For aa indices daily north (N) and south (S) values, and half-daily antipodal mean (M) values are given. Quiet 24-hour and 48-hour intervals centered on 1200 UT are indicated for really quiet as C and for quiet but with some slightly disturbed three-hour intervals as K. The first hundred years series of aa is in IAGA Bulletin No.33, and complementary data are in IAGA Bulletin No.39.

DAILY AVERAGE INDICES Ap

	1980		1981									
DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
1	16	19	13	14	28	23	16	7	17	18	5	9
2	11	7	9	22	25	10	7	7	22	15	18	22
3	5	21	9	13	8	14	5	16	9	18	9	36
4	12	8	14	9	12	11	4	5	9	11	11	17
5	5	4	9	25	81	4	4	6	12	15	17	7
6	6	4	9	48	11	10	5	14	19	14	8	6
7	6	6	6	20	20	9	5	50	14	10	5	32
8	6	9	11	14	10	11	11	16	8	4	10	25
9	9	10	6	22	4	8	39	4	6	7	11	21
10	14	10	9	3	8	8	32	4	4	16	9	27
11	24	16	19	10	7	39	61	6	13	15	21	46
12	12	16	4	11	11	96	13	4	20	9	10	12
13	6	6	6	7	28	121	10	5	9	9	12	17
14	10	8	6	3	45	27	18	4	7	8	10	73
15	22	10	7	10	19	8	54	11	4	13	10	20
16	16	16	12	10	14	13	59	21	8	8	7	8
17	11	5	8	6	18	19	13	10	29	25	4	18
18	16	15	4	6	19	14	57	10	10	23	18	6
19	17	79	3	6	10	45	18	10	9	10	38	23
20	17	21	4	9	9	53	43	10	12	8	9	67
21	13	26	2	5	8	41	12	7	6	14	7	33
22	8	11	9	6	4	33	6	5	24	13	13	72
23	10	5	8	12	4	31	19	5	37	56	4	27
24	12	3	8	20	4	22	18	13	13	28	7	18
25	16	8	7	24	36	19	33	15	134	16	13	18
26	21	6	8	29	28	62	8	14	78	8	32	10
27	19	10	8	21	14	43	6	10	24	25	21	10
28	23	4	16	11	12	13	12	9	8	18	6	19
29	16	9	15		18	19	6	33	5	18	14	12
30	24	13	7		16	7	6	14	9	17	15	12
31		15	22		26		8		12	15		4
MEAN	13	13	9	14	18	23	20	12	19	15	12	23

GEOMAGNETIC ACTIVITY INDICES


DAYS IN SOLAR ROTATION INTERVAL
ROT - NO.
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
2023
Jul 30 31 1 5 10 15 20 25 Aug
2024
Aug 26 30 31 1 5 10 15 20 21 Sep
2025
Sep 22 25 30 1 5 10 15 18 Oct
2026
Oct 19 20 25 30 31
Nov 1 5 10 14 Nov
2027
Nov 15 20 25 30 1 5 10 11 Dec
KEY
0 1 2 3 4 5 6 7 8 9
0 + - 0 + - 0 + - 0 + - 0 + - 0 + - 0 + - 0 + - 0 + - 0
▲ = sudden commencement
PLANETARY MAGNETIC
THREE-HOUR-RANGE INDICES
Kp (after Bartels)
Kp till 1981 October 31
Ks (from Wingst and Göttingen) till Nov 19

SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

OCTOBER 1981

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS

The meaning of the station symbols is given in the IAGA-Bulletin nr. 32h, page 106-116.
Times of ssc are mean values.

Sudden commencements followed by a magnetic storm or a period of storminess (ssc)

02 2022 A: SOD DOB ESK WNG WIT NGK HAD DOU VIC CLF OTT AQU COI EBR FRD HTY MPO CZT KGL; B: TOL KNY DUM; C: KAK

10 1434 A: DOU VIC COI; B: ESK WNG WIT NGK AQU HTY DUM; C: HAD CLF EBR KAK KNY MPO CZT KGL (si: B: TOL)

13 2240 A: NUR WIT DOU VIC MMB OTT AQU EBR COI TOL FRD KAK HTY KNY MPO CZT KGL DUM; B: WNG NGK HAD CLF; C: ESK

22 0525 A: NUR WNG DOU OTT COI FRD KNY MPO; B: WIT NGK MMB AQU EBR TOL KAK HTY CZT KGL DUM; C: HAD CLF

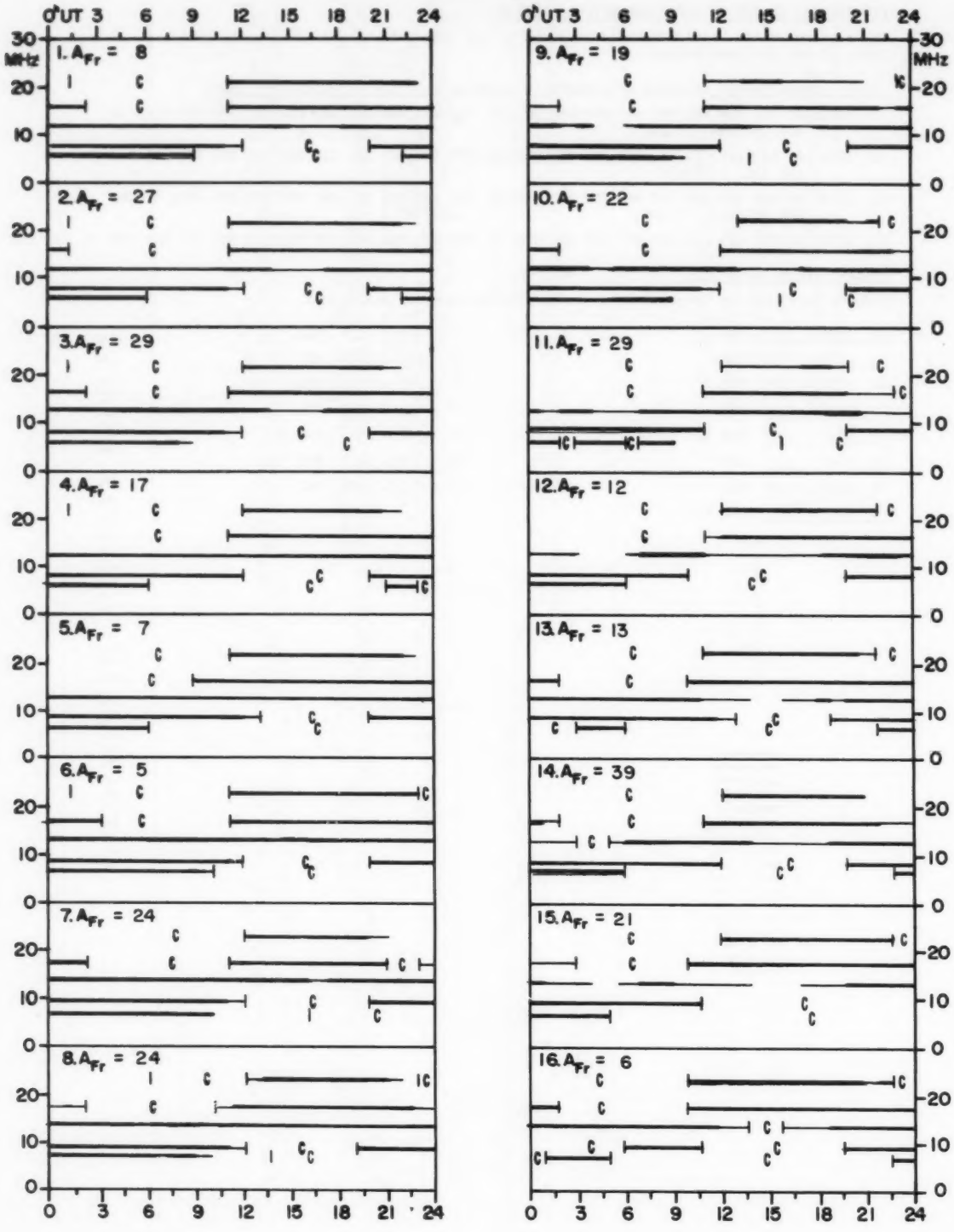
Solar-flare effects (sfe)

Effects confirmed by ionospheric or solar observations are underlined.

02 1629 - 1655 WNG
03 1028 - 1100 WNG
04 1154 - 1224 TOL
11 0334 - 0350 KNY
12 0620 - 0720 MMB KAK HTY KNY
12 1444 - .... EBR
13 0708 - 0730 KNY
15 0443 - 0501 KAK KNY
15 1141 - 1214 NGK
16 0639 - 0700 KNY
19 1217 - 1235 TOL
21 1154 - 1212 NGK
26 1049 - 1115 NGK TOL
28 0351 - 0437 MMB KAK
29 1028 - 1051 TOL

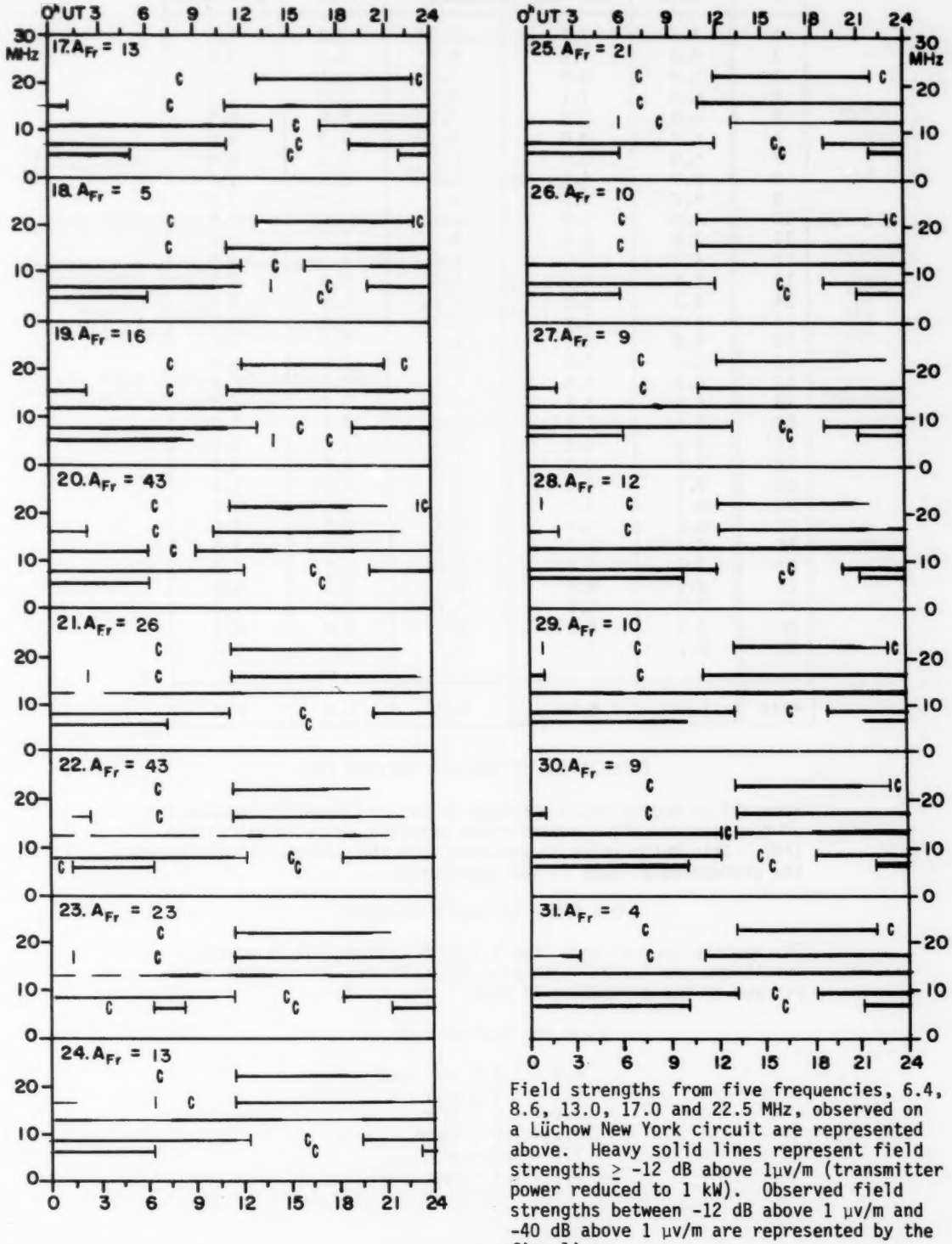
TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

OCTOBER 1981



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

OCTOBER 1981



Field strengths from five frequencies, 6.4, 8.6, 13.0, 17.0 and 22.5 MHz, observed on a Lüchow New York circuit are represented above. Heavy solid lines represent field strengths $\geq$ -12 dB above 1μv/m (transmitter power reduced to 1 kW). Observed field strengths between -12 dB above 1 μv/m and -40 dB above 1 μv/m are represented by the fine line.

RADIO PROPAGATION QUALITY INDICES

OCTOBER 1981

DAY	TOKYO	NEW YORK	TEHERAN	OSLO	BRACKNELL
1	6.3	7.7	7.0	7.2	9.9
2	5.9	7.9	6.7	7.2	9.0
3	5.9	5.8	7.0	6.1	8.1
4	6.6	7.1	7.3	7.0	9.9
5	5.9	7.7	7.2	5.6	6.9
6	6.9	8.0	6.8	7.3	9.5
7	5.9	5.9	6.4	5.2	6.9
8	5.3	4.9	5.1	2.9	1.8
9	4.6	3.9	6.1	5.3	3.2
10	4.6	5.2	6.7	4.9	4.9
11	3.2	2.5	6.3	2.5	0.0
12	4.9	5.2	4.6	4.3	2.9
13	5.6	4.9	5.6	6.9	7.9
14	5.3	5.2	6.6	3.5	3.4
15	5.7	6.6	6.9	7.0	6.1
16	6.8	6.8	5.2	8.6	7.7
17	7.1	7.1	6.8	7.1	6.2
18	6.8	6.4	5.7	6.8	8.2
19	6.5	5.4	5.7	5.2	6.7
20	5.1	2.1	3.8	2.9	4.0
21	5.9	4.2	5.9	5.7	6.0
22	5.6	1.9	6.5	3.4	3.0
23	5.7	3.6	5.5	3.8	1.3
24	6.7	4.0	6.1	5.2	2.7
25	5.9	5.7	6.8	5.5	4.0
26	7.6	7.0	7.1	6.8	7.3
27	7.6	6.7	6.4	7.1	5.9
28	6.9	6.0	6.3	7.7	6.6
29	7.2	5.8	5.7	7.0	6.0
30	7.2	6.5	6.3	6.4	6.4
31	8.1	7.8	6.7	8.4	7.6
MEAN	6.1	5.7	6.2	5.8	5.8

CALCULATION OF QUALITY INDICES (Q)

From all 24 hourly field strength values and from all frequencies of the same circuit a median field strength value is calculated (FD). This daily value is compared with the average value (FA) of the preceeding 27 days (1 sun rotation).

$$Q = 6.0 + 20 \log(FD/FA)/3.0$$

The quality indices vary from 0.0 to 9.9 where 6.0 is normal. Conditions are "normal" (index = 6.0), if they correspond to the average of the preceeding 27 days.

Scale for Quality Indices

0.0 - 1.0 = very poor
1.1 - 3.0 = poor
3.1 - 5.0 = fair
5.1 - 7.0 - normal
7.1 - 9.0 = good
9.1 - 9.9 = very good

SGD 448 Part I (Prompt)

LATE DATA

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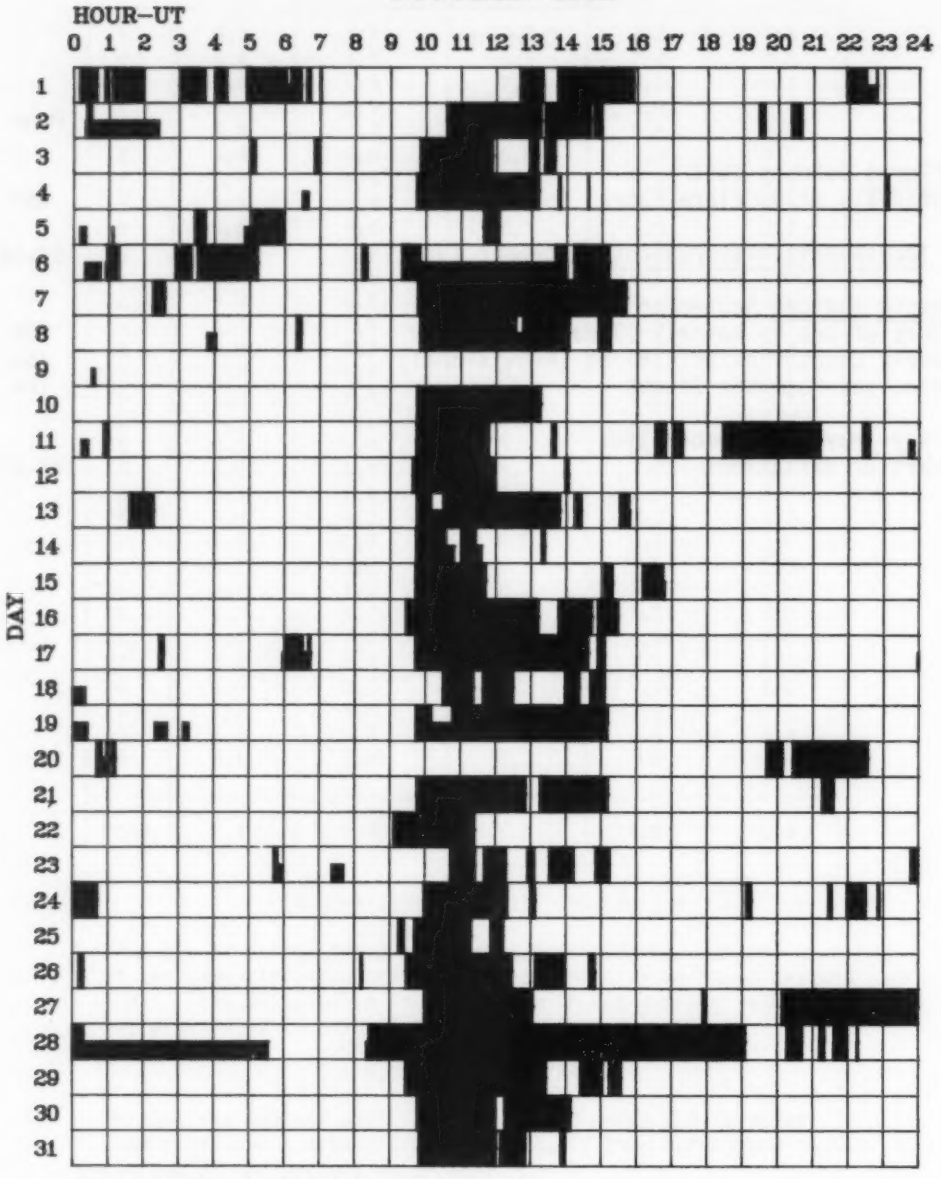
INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

OCTOBER 1981



Observatories included in total patrol:

Athens	Holloman	Learmonth	Palehua	Ramey
Big Bear	Huancayo	Manila	Peking	Upice
Bucharest	Istanbul	Mitaka	Purple Mt.	Wendelstein
				Yunnan

Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

SUDDEN IONOSPHERIC DISTURBANCES

SEPTEMBER 1981

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	HALE REGION
01	0129	0236	0139	1	3	2		1	1	1	3		*	
01	0358	0433D	0419	1-	3				1	1			*	
01	0514E	0540D	0524	1-	3				1	1			*	
01	0540E	0750	0550	2	3			1	1	1	1		*	
01	0957	1120	1015	2	5	3			1	1			*	
01	1136	1230	1150	1-	3	1			1	1			*	
01	1416	1430	1419	1-	5			1	1	1	3		*	
01	1653	1732	1659	1-	5				1		9		*	
02	0448	0518U	0455	1-	3				1	1			NF	
02	0618	0720	0622	1	3				1	1	2		NF	
03	0633	0651	0645	1	3			3					NF	
03	1641	1715	1646	1-	5	1			1		13		*	
03	1706	1740	1716	1-	3						4		*	
03	1911	1950	1915	1	3						12		*	
03	2012	2100	2020	1	3						8		*	
03	2256	0151	2311	2+	5	1			1	1	11		*	
04	1600	1700	1608	1-	5	3		1	1	1	14		*	
04	1745	1830	1802	1	3						5		*	
04	2354	0109	0024	1-	5	1			1		2		*	
05	0343	0435	0408	1-	3				1	1			*	
05	0536	0604	0544	1-	3				1	1	1		*	
05	0628E	0653	0637	1-	5			3	1		1		NF	
05	0750	0805	0800	1-	3	1			1				0740	17830
05	0815E	1015	0840	2+	5	2		2	1	2	1		0816	17830
05	1822	1847	1826	2	5	2			2		3		*	
05	1858	2003	1908	1-	5	2			2		15		*	
05	2319	2353	2335	1-	3				1		3		*	
05	2359	0117	0005	1	5	2		1	1	1	2		*	
06	0539	0625	0547	1-	3			1	1	1	1		*	
06	0625	0707	0630	1-	3			1	1		1		*	
06	0728	0914	0758	1	3				1	1	1		*	
06	0749	0840	0758	1	5	3		2	1	1	1		0745	17817
06	1210	1212D	1217	1-	3	1		1	1	1	1		*	
06	1248	1315	1251	1-	3				1	1			*	
06	1535	1613	1540	1-	3				1		9		*	
06	1653	1748	1658	1-	5				1		16		*	
06	1932	2000	1943	1-	3						13		*	
06	2025	2054	2031	1-	3				1		12		*	
06	2108	2326	2121	1	3	1			2		2		*	
06	2142	2207	2147	1-	3	1					10		*	
06	2341	0008D	2358	1-	3				1	1			*	
07	0009E	0055D	0027	2+	5	2			1	1	4		*	
07	0312	0436	0328	2+	3	2			1	1			*	
07	0510	0640D	0515	2	5	4		1	1	2			*	
07	0646	0720	0649	1-	3				1	1			0642E	17837
07	0906	0940	0915	1-	3				1	2	2		NF	
07	1037	1110	1044	2	5	3		4	1	1	2		1031	17830
07	1133	1213	1142	1-	5	3		3	2	1	3		1126	17830
07	1216	1250	1223	1	5	3		4	2	1	7		1214	17830
07	1327	1405	1333	1	5	2		4	1	1	9		1326	17830
07	1410	1420	1411	1-	3						4		1412	17830
07	1445	1500	1450	1-	5	1		2	1	1	10		1444	17830
07	1645	1715	1652	1-	5	2			1		9		*	
07	1808	1915	1815	1-	3	1			1		13		*	
07	1838	2000	1845	2	3				1		13		*	
07	2004	2057	2012	1-	5	1			2		14		*	
07	2056E	2200	2100	1-	5				1		13		*	
07	2223	2338	2230	1	5	3			1		13		*	
08	0008	0028U	0020	1-	3				1	1			*	
08	0118	0154	0134	1-	3				1	1			*	
08	0338	0403	0342	1-	3				1	1	1		*	
08	0403E	0453D	0415	1-	3	2			1	1	2		*	
08	0537E	0621	0543	1-	3	1			1	1	2		*	
08	0621	0654	0631	1-	3			1	1	1			*	
08	1131	1145	1131	1-	3	1		1	1	1			1140	No data
08	1339	1349	1344	1-	3				1		1		*	
08	1420	1525	1426	1-	5	2		1	1	1	2		*	
08	1537	1630	1542	1-	5			1	1	1	8		*	
08	1700	2005	1710	1	5	2			1		11		*	
08	2334	0025	2351	1-	1				1				*	

SUDDEN IONOSPHERIC DISTURBANCES

SEPTEMBER 1981

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	HALE REGION
09	0113	0205	0118	1	5	1		1	1	1	3		*	
09	1148	1300	1155	2+	5	3		4	2	1	1		*	
09	1328	1412	1335	2+	5	3		2	1	1	7		*	
09	1550	1615	1610	1-	3				1		8		*	
09	1617	1730	1625	1-	3				1		6		*	
09	2032	2104	2038	1-	3				1		5		*	
09	2209	2338	2220	1-	5	2			1		9		*	
09	2356	0045D	0008	1	3	1			1		1		*	
10	0423	0544	0434	1	3				1	1	2		*	
10	0725	0812D	0736	1	5	2		1	1	2	1		0730	17825
10	0812E	0936	0825	2+	5	4		3	1	1	1		0810	17830
10	0936	1113	0946	2+	5	4		5	2	1	1		0938E	17830
10	1727	1845	1734	1-	5	1			1		12		*	
11	0315	0457	0328	3	3	1			1	1	4		*	
11	0753	0844	0800	1-	3			1	1	2			NF	
11	1016	1100	1025	1-	5	2		3	1	1	2		*	
11	1130	1300	1140	1-	5	2		1	1	1			*	
11	1705	1728	1709	1-	3				1		8		NF	
11	1741	1905	1752	1-	3	1			1		13		NF	
11	2310	0045	2318	1	5	2			2	1	9		NF	
12	0046	0130	0049	1-	3	1			2	1	1		*	
12	0304	0337D	0317	1-	3				1	1			*	
12	0508	0602	0537	1	3				1		1		*	
12	0710	0841	0723	1-	3	2			2	2			0710	17836
12	1154	1245	1210	1-	3	1			1	1	2		NF	
12	1433	1620	1502	1-	1				1				*	
12	1756	1900	1807	1-	3				1		13		*	
12	2224	2318	2230	1-	3				1		5		NF	
13	0007	0213	0014	2+	3	2			2				NF	
13	1000	1043	1009	1-	3	1			1	1	2		*	
13	1948	2020	1951	1-	3				1		9		NF	
13	2348	0225	0014	2+	3				1		3		*	
14	0434	0538	0446	1	3	1			1	1			NF	
14	1154	1230	1202	1-	3				1	1			NF	
14	1615	1735	1631	1-	3				1		3		*	
14	1820	1845	1830	1-	3				1		14		*	
14	2255	2333	2302	1-	3				1		4		*	
15	0009	0243	0116	1	3				2	1			NF	
15	0032E	0236	0115	1	3	2			1	1	4		NF	
15	1345	1515	1354	1	5	3		2	1	1	5		*	
15	1845	1913	1850	1-	3				1		5		NF	
15	2113	2300	2120	2+	5	3		4	2		12		*	
16	1334	1430	1346	1	5	3		4	1	1	14		NF	
16	1611	1635	1619	1-	3			1	1		3		NF	
16	1749	1905	1803	1-	5	1			1		16		NF	
16	2132	2239	2136	1-	3				1		10		NF	
17	0115	0252	0144	1-	3				2	1			*	
17	0318	0416	0332	1-	3	1			2	1			*	
17	0542	0750	0612	1	3				2		1		NF	
17	0554	0654D	0612	1-	1					1			0600E	17830
17	1653	1753	1705	1-	3				1		5		1653	17842
17	1815	1942	1830	1-	3	1			1		13		*	
17	2325	0025	2337	1-	5				2		7		2321	17842
18	0132	0226	0141	1-	3	1			2	1	2		0133	17853
18	1415	1508	1421	1-	3				1		5		1413	17853
18	1735	1815	1738	1-	3				1		11		1734	17856
18	1750	1833	1753	1-	3				1		1		1750	17854
19	0314	0409D	0343	1	3				2				*	
19	0411E	0548	0416	1	3	1			1	1	2		0405	17842
19	0547	0739	0556	3	5	2		1	2	1	2		0547	17853
19	1650	1740	1655	1-	3				1		14		*	
19	1751	1845	1757	1-	3				1		12		1744	17853
19	2357	0048	0004	1-	1				1				*	
21	0123E	0230	0138	1-					1	1			0117	17855
21	1054	1150	1100	1	5	2		2	2	1	1		1059	17853

SUDDEN IONOSPHERIC DISTURBANCES

SEPTEMBER 1981

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	HALE REGION
22	0838	1014	0852	2	5	3		4	1	1			0839E	17864
23	0515	0548	0520	1-	1				1				0518	17853
23	0552	0640	0606	1-	3				1		1		0552	17853
23	0714	0817	0721	1	5	1		2	2	1	2		0714	17853
23	1305	1330	1310	1+	3	1		1	1	1			*	
23	1419	1523	1430	1-	3				1		4		*	
23	1755	1840	1805	1-	3				1		8		NF	
24	0210	0238	0220	1-	1				1				0212	17853
24	0943	1026	0953	1	3			3					*	
25	0938	1015	0942	1	3			3					NF	
25	1033	1120	1040	2	3			3					*	
26	1011	1105	1026	1+	5	2		1	1	1	1		*	
26	1302	1355	1317	1	5	1		1	1	1	5		*	
27	1839	1925	1848	1-	3				1		9		1836	17862
28	0617	0641	0628	1	1			1					0612	17865
28	1205	1325	1215	1-	3			1	1	1			1210E	17862
28	2354	0048	0003	1-	3			1	2		1		2354E	17870
29	0534	0642	0542	1-	3				2	1	2		0533	No data
29	0725	0811	0733	1-	1				1				0725	No data
29	1416	1625	1431	1	5	3		3	1	1	8		NF	
29	1516	1645	1528	1	3						5		*	
30	0045	0240	0200	1-	5	1			2	1	3		0041	17864
30	0211	0250	0217	1-	3				1	1			0208	17870
30	0512	0638	0521	1-	3				2	1	1		*	
30	1720	1815	1733	1-	5	1			1		14		NF	

SIDs BY HALE REGION

SEPTEMBER 1981

Region	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
17817						1																									
17825										1																					
17830					2		6			2							1														
17836												1																			
17837							1																								
17842																	2		1												
17853																		2	2		1		3	1							
17854																		1													
17855																					1										
17856																		1													
17862																											1	1			
17864																						1								1	
17865																												1			
17870																												1		1	
NO FLARE		2	1		1		1				4	2	2	2	3	4	1						1		1				1	1	
NO FLARE PATROL	8		5	3	6	12	9	11	8	2	3	5	2	3	2		3		3				2	1	1	2			1	1	
NO DATA								1																					2		
EVENT TOTALS	8	2	6	3	9	13	17	12	8	5	7	8	4	5	5	4	7	4	6		2	1	6	2	2	2	1	3	4	4	

OBSERVATORIES REPORTING FOR SEPTEMBER 1981:

Darmstadt, GFR (DA)	SWF	Lintong, China (LT)	LF-SPA
Durham, North Carolina, USA (A54)	SES	Louisville, Kentucky, USA (A26)	SES
Edenvale, Transvall, South Africa (A52)	SES	Mayfield Village, Ohio, USA (A28)	SES
Eureka, Montana, USA (A56)	SES	Maui, Hawaii, USA (MI)	SWF
Frenchtown, Montana, USA (A56)	SES	Missoula, Montana, USA (A31)	SES, SWF
Glenorchy, Tasmania, Australia (GN)	SWF	Panska Ves, Czechoslovakia (PU)	SEA, SWF
Hiraiso, Japan (HI)	SWF	Paterson, New Jersey, USA (A46)	SES
Hobart, Tasmania, Australia (A43)	SES	Saint Cloud, Minnesota, USA (SC)	SES
Hobart, Tasmania, Australia (TA)	SEA	Sao Paulo, Brasil (UM)	SES, SPA
Houston, Texas, USA (A50)	SES	Thornwood, New York (A48)	SES
Huancayo, Peru (HU)	SWF	Trenton, New Jersey, USA (NJ)	SES
Inubo, Japan ((IN)	SPA	Tucson, Arizona, USA (A9)	SES
Juliusruh, GDR (JH)	SWF	Upice, Czechoslovakia (UI)	SEA
Kasugai, Japan (KA)	SPA	Valley Cottage, New York, USA (A1)	SES
Kuhlungsborn, GDR (KU)	SEA, LF-SPA	Vsetin, Czechoslovkaia (VS)	SEA
La Crescenta, California, USA (A40)	SES	Yakima, Washington, USA (A37)	SES
Lake Hiawatha, New Jersey, USA (A32)	SES	Zilina, Czechoslovakia (ZL)	SEA
Latrobe, Pennsylvania, USA (A19)	SES		

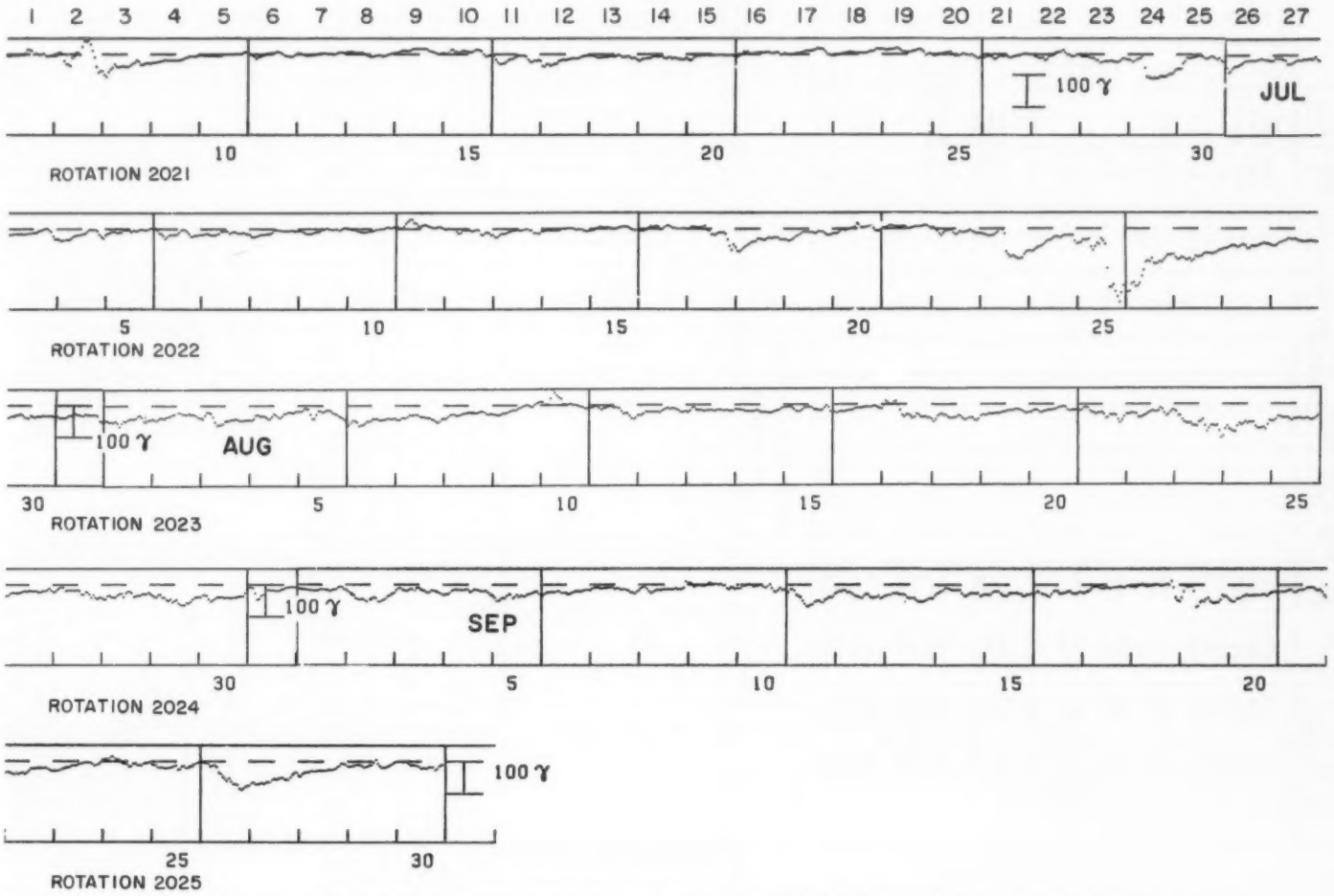
* No Flare Patrol

Observations are not necessarily continuous for each reporting station.

GEOMAGNETIC ACTIVITY INDICES

Hourly Equatorial Dst

by Bartels Rotation



Note: Both the sensitivity indicator placed on the last day of the month and the zero reference level change from month to month.

HOURLY EQUATORIAL Dst VALUES (PROVISIONAL)

NASA/GODDARD SPACE FLIGHT CENTER

SEPTEMBER 1981

(Time-UT) (Units-Gammas)

DY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	-12	-13	-14	-15	-16	-17	-17	-19	-19	-18	-15	-14	-14	-16	-16	-20	-17	-14	-15	-9	-7	-8	-14	-16
2	-21	-25	-30	-35	-43	-46	-48	-46	-48	-52	-56	-47	-44	-40	-44	-54	-55	-51	-47	-43	-37	-33	-28	-25
3	-17	-11	-12	-16	-18	-20	-16	-13	-15	-19	-11	-10	-16	-18	-20	-24	-24	-19	-18	-20	-22	-26	-29	-33
4	-31	-29	-25	-19	-16	-15	-16	-17	-17	-17	-14	-16	-23	-20	-15	-17	-18	-20	-21	-20	-19	-25	-32	-36
5	-42	-52	-52	-46	-41	-43	-36	-30	-32	-43	-36	-33	-39	-35	-37	-38	-32	-30	-28	-25	-22	-21	-29	-36
6	-31	-28	-24	-24	-23	-23	-24	-21	-22	-26	-26	-26	-31	-29	-26	-23	-20	-20	-21	-21	-17	-16	-17	-18
7	-12	-11	-9	-9	-12	-12	-11	-10	-9	-10	-5	-14	-12	-12	-14	-15	-15	-17	-19	-24	-25	-28	-22	-18
8	-12	-8	-7	-13	-21	-27	-23	-16	-16	-17	-16	-15	-15	-14	-14	-14	-14	-12	-14	-14	-13	-10	11	5
9	6	2	-6	-3	-2	-2	-3	-5	-1	5	6	2	1	2	0	2	-2	-2	-12	-14	-9	-9	-13	-12
10	-12	-11	-5	-3	-1	1	0	-6	-4	-4	0	-2	-7	-10	-5	1	-12	-20	-22	-17	-11	-15	-16	-17
11	-23	-14	-13	-19	-32	-36	-40	-51	-61	-68	-68	-63	-62	-55	-51	-51	-55	-57	-48	-43	-38	-40	-36	-27
12	-24	-20	-20	-17	-18	-24	-22	-27	-33	-37	-38	-41	-42	-36	-30	-32	-38	-41	-40	-40	-36	-43	-40	-36
13	-35	-32	-33	-27	-27	-26	-30	-31	-30	-34	-41	-43	-42	-43	-49	-54	-54	-53	-50	-47	-43	-42	-41	-34
14	-27	-24	-20	-17	-11	-11	-13	-16	-17	-16	-16	-16	-27	-35	-36	-31	-27	-26	-28	-27	-26	-37	-34	-31
15	-31	-32	-31	-24	-21	-21	-21	-26	-34	-35	-36	-29	-26	-26	-26	-25	-28	-30	-36	-35	-30	-32	-28	-26
16	-25	-21	-23	-27	-30	-32	-36	-38	-30	-21	-18	-20	-27	-27	-25	-24	-20	-20	-26	-28	-27	-24	-21	-24
17	-25	-23	-19	-16	-9	-7	-3	-7	-10	-12	-11	-9	-9	-11	-3	-8	-8	-6	-6	-8	-9	-4	-2	-5
18	-5	-7	-6	0	1	2	-3	-5	-2	-2	0	3	1	-1	-2	-2	1	3	0	12	-8	-39	-48	-52
19	-40	-20	-1	-7	-4	-5	-19	-70	-66	-55	-51	-52	-44	-40	-50	-55	-57	-54	-55	-46	-32	-36	-35	-42
20	-48	-52	-52	-43	-41	-41	-36	-34	-29	-33	-33	-32	-32	-32	-32	-32	-29	-31	-33	-27	-23	-21	-20	-24
21	-21	-19	-21	-19	-18	-15	-16	-22	-22	-18	-15	-15	-14	-11	-3	-8	-9	-10	-15	-17	-14	-22	-34	-38
22	-34	-33	-37	-38	-42	-37	-41	-37	-35	-39	-36	-29	-22	-22	-21	-21	-20	-21	-21	-19	-23	-26	-30	-29
23	-30	-30	-28	-24	-22	-19	-19	-17	-13	-12	-13	-10	-8	-6	-4	-3	-4	-5	-9	-13	-12	-9	-3	5
24	7	6	7	13	14	9	6	4	-2	-6	-7	-10	-17	-14	-7	-6	-12	-12	-13	-8	-5	-6	-2	-8
25	-12	-12	-18	-21	-18	-20	-22	-20	-21	-19	-15	-13	-26	-24	-15	-14	-20	-20	-16	-14	-10	-7	-4	-1
26	-3	-5	-5	-9	-16	-13	-12	-18	-35	-39	-48	-55	-62	-54	-63	-70	-71	-74	-86	-88	-85	-79	-77	-74
27	-66	-66	-72	-71	-69	-67	-71	-65	-64	-65	-58	-54	-57	-54	-52	-51	-56	-57	-58	-49	-41	-35	-36	-45
28	-46	-38	-35	-34	-33	-30	-30	-30	-30	-28	-29	-28	-29	-27	-26	-27	-25	-22	-17	-13	-7	-7	-11	-14
29	-16	-14	-13	-11	-11	-10	-13	-19	-16	-14	-12	-10	-3	5	-8	-15	-20	-18	-18	-14	-12	-8	-4	-1
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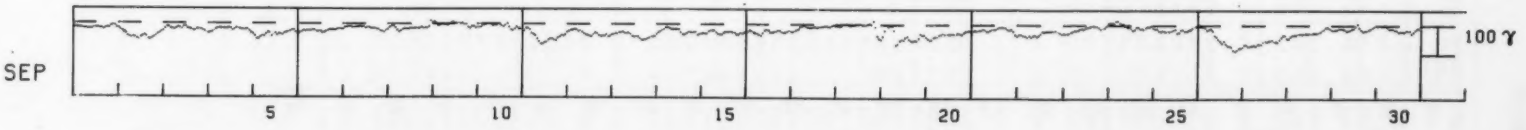


PRINCIPAL MAGNETIC STORMS

SEPTEMBER 1981

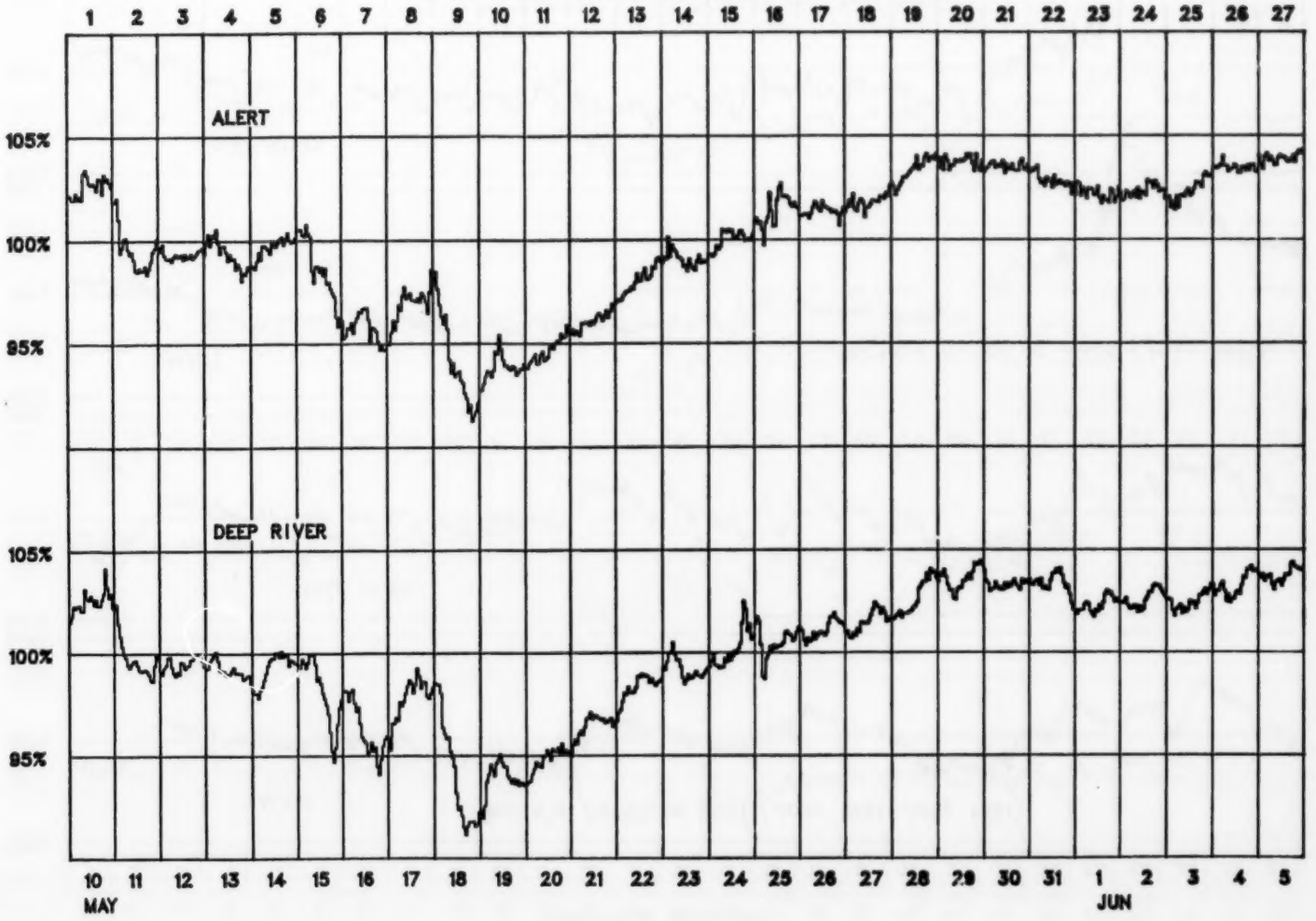
OBS. 3 letter code	GEOMAG-NETIC LATI-TUDE	COMMENCEMENT DAY	COMMENCEMENT hr min (UT)	COMMENCEMENT TYPE	SC - AMPLITUDES D(')	SC - AMPLITUDES H(γ)	SC - AMPLITUDES Z(γ)	MAXIMUM 3 HOUR - INDEX K DAY(3 HOUR PERIOD)	K	RANGES D(')	RANGES H(γ)	RANGES Z(γ)	UT END DAY	UT END HOUR
COL	64.6N	02	01--	..	..	..	..	02(4)	6	141	1140	640	02	20
NEW	55.1N	02	02--	..	..	..	..	02(4)	5	25	92	110	04	03
HYB	07.6N	02	0100	..	..	..	..	02(6)	4	8	177	36	03	17
NEW	55.1N	04	0717	SC	2	17	--	04(8) 05(1)	5	27	109	84	07	09
HYB	07.6N	04	1500	..	..	..	..	05(1)	4	9	97	33	06	13
KGL	56.5S	04	2127	SC	3	21	10	04(8)	5	--	--	--	06	12
FRD	49.6N	08	2146	SC	- 2	59	- 5	08(8) 11(1,2,3,4) 12(2)	4	22	160	36	13	--
HON	21.1N	08	2146	SC	--	31	11	08(8)	4	3	31	18	09	04
JAI	17.3N	08	2145	SC	- .5	34	- 6		-	12	118	54	11	18
SHL	14.7N	08	2145	SC	.5	29	5		-	11	202	60	11	18
UJJ	13.5N	08	2145	SC	- .2	38	- 7		-	10	128	54	11	18
ABG	09.5N	08	2145	SC	- .5	29	- 2	08(8) 10(5,6) 11(4,5)	4	10	140	68	11	18
HYB	07.6N	08	2146	SC	- .1	29	- 1	08(8) 09(1) 10(6)	4	10	86	42	10	17
ANN	01.5N	08	2145	SC	- .7	30	17		-	9	201	79	11	18
TRD	01.1S	08	2145	SC	.3	23	31		-	7	264	88	11	18
KGL	56.5S	08	2148	SC*	4	10	--	09(1)	4	--	--	--	09	12
HYB	07.6N	11	0000	..	..	..	..	11(5)	4	8	117	26	11	23
HYB	07.6N	14	0500	..	..	..	..	14(5)	4	9	133	61	15	18
COL	64.6N	18	1911	SC*	35	--	69	19(3,4)	5	96	660	410	20	01
SIT	60.0N	18	1906	SC*	20	* -12	*-17	* 19(6)	6	--	510	320	19	23
NEW	55.1N	18	1911	SC*	5	17	2	19(3)	5	38	162	156	20	05
WIT	54.2N	18	1913	SC	- 3	45	0	18(7,8) 19(1,3,5)	5	30	145	27	19	21
FRD	49.6N	18	1911	SC*	- 1	40	- 6	18(7,8) 19(3,5)	5	30	130	75	20	--
SJG	29.9N	18	1911	SC	--	26	8	18(7)	6	13	107	45	23	07
HON	21.1N	18	1916	SC	1	31	11	19(3)	6	12	153	58	20	07
JAI	17.3N	18	1911	SC	- 1.4	28	- 7		-	12	93	67	20	16
SHL	14.7N	18	1911	SC	.4	24	5		-	13	107	54	20	16
UJJ	13.5N	18	1911	SC	- 1	29	- 7		-	10	112	58	20	16
ABG	09.5N	18	1911	SC	- 1	22	- 8	18(7)	5	9	129	75	20	15
HYB	07.6N	18	1912	SC	- .6*	23	- 1	18(7,8) 19(1,3,5)	5	10	151	52	20	21
GUA	04.0N	18	1911	SC	--	19	- 4	19(1)	6	10	230	70	19	15
ANN	01.5N	18	1911	SC	- 1.2	26	15		-	8	225	140	20	16
HUA	00.6S	18	1911	SC*	5	139	12	19(5,7)	6	9	387	64	19	24
TRD	01.1S	18	1911	SC	--	--	--		-	--	--	--	20	16
PMG	18.6S	18	1912	SC	.1	20	14	19(3)	6	8	240	140	20	06
HER	33.7S	18	1912	SC	2	23	15	18(7,8) 19(1,3)	5	22	112	134	19	15
KGL	56.5S	18	1911	SC*	4	21	11	18(8)	7	--	--	--	20	10
HYB	07.6N	24	0200	..	..	..	..	24(3) 25(5)	4	5	140	38	25	19
FRD	49.6N	25	08--	..	..	..	..	26(4,8) 27(3)	5	18	108	66	28	--
COL	64.6N	26	07--	..	..	..	..	26(4,6,7) 27(3,4)	6	166	1010	640	27	20
SIT	60.0N	26	08--	..	..	..	..	26(4)	7	--	--	500	27	12
NEW	55.1N	26	0318	..	..	..	..	25(5) 26(4,5) 27(3)	5	34	105	247	28	05
JAI	17.3N	26	0317	SC	- .2	3	- 1		-	8	131	42	27	19
SHL	14.7N	26	0317	SC	.3	6	1		-	6	176	32	27	19
UJJ	13.5N	26	0317	SC	- .1	6	- 2		-	6	142	40	27	19
ABG	09.5N	26	0317	SC	- .1	5	- 1	26(4,5,7)	4	6	160	44	27	19
HYB	07.6N	26	0300	..	..	..	..	26(7)	5	6	172	27	27	20
ANN	01.5N	26	0317	SC	- .3	14	2		-	4	215	78	27	19
HUA	00.6S	26	0318	..	..	..	..	26(5,6)	5	7	283	40	27	08
TRD	01.1S	26	0317	SC	.1	16	13		-	3	265	100	27	19
HYB	07.6N	29	0930	SC	- .1	6	- 1	29(5) 30(2)	4	7	99	51	01	03
HUA	00.6S	29	0934	..	..	..	..	29(6)	6	8	371	55	29	24
HUA	00.6S	30	0540	..	..	..	..	30(5,6,7)	5	8	368	87	30	24

REPORTS WERE RECEIVED FROM THE FOLLOWING OBSERVATORIES:

ALIBAG ANNAMALAINAGAR COLLEGE FREDERICKSBURG GNANGARA GUAM HERMANUS HONOLULU
HUANCAYO HYDERABAD IRKUTSK JAIPUR KERGUELEN NEWPORT PORT MORESBY SAN JUAN
SHILLONG SITKA TRIVANDRUM UJJAIN WITTEVEEN

COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2020 (May 1981–June 1981)



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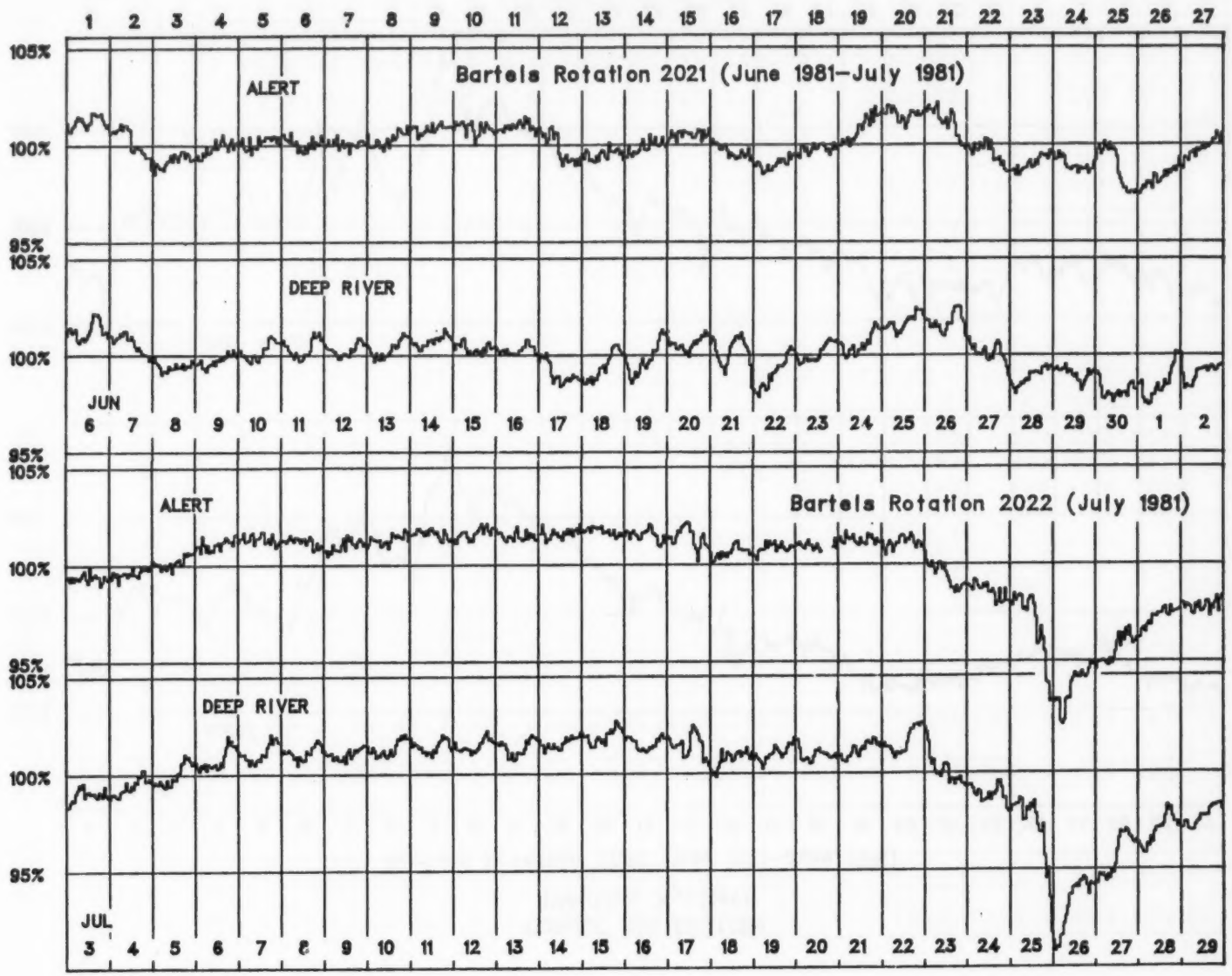
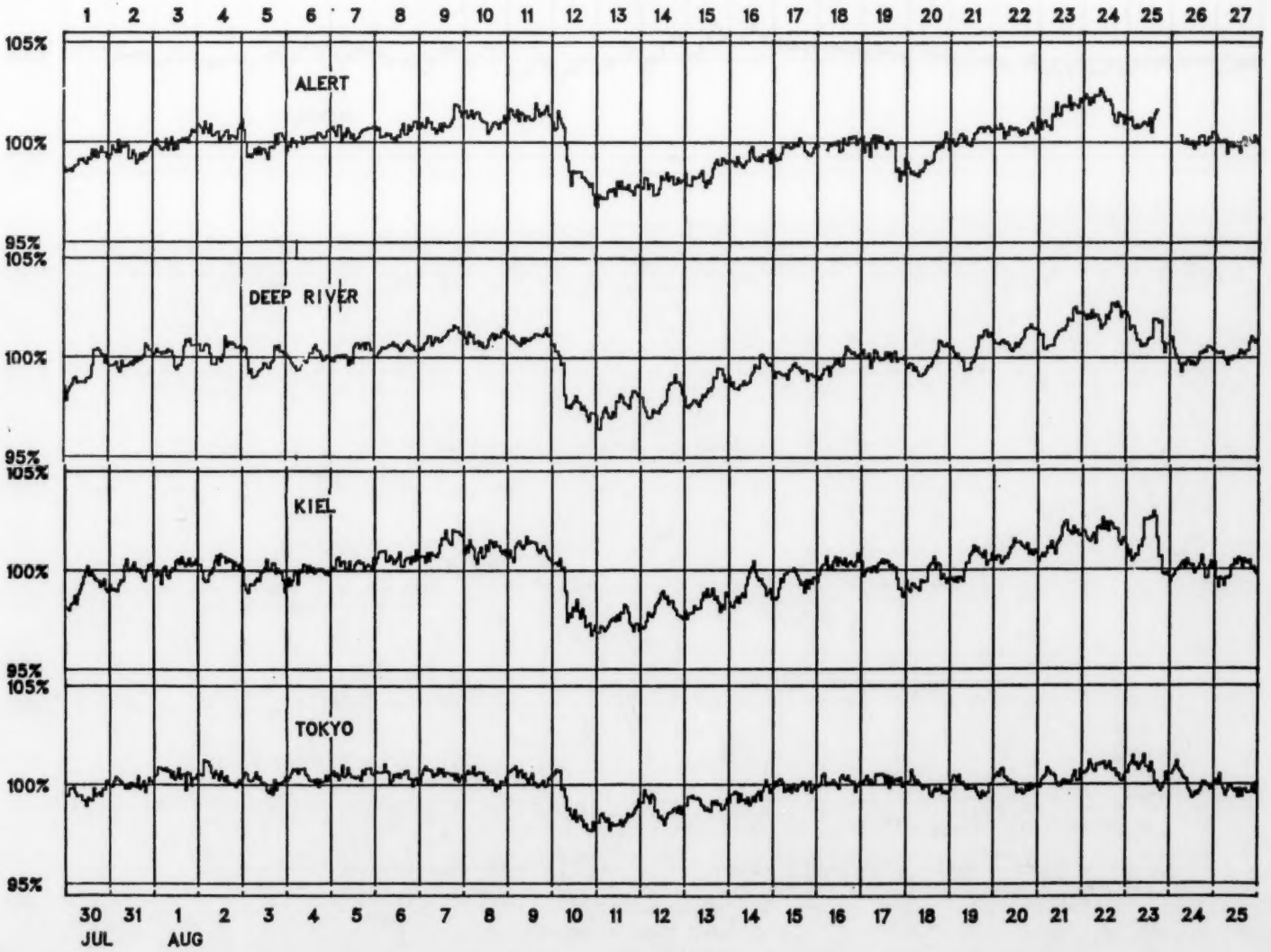
Late
May-Sep 81

COSMIC RAY INDICES
(Neutron Monitor)



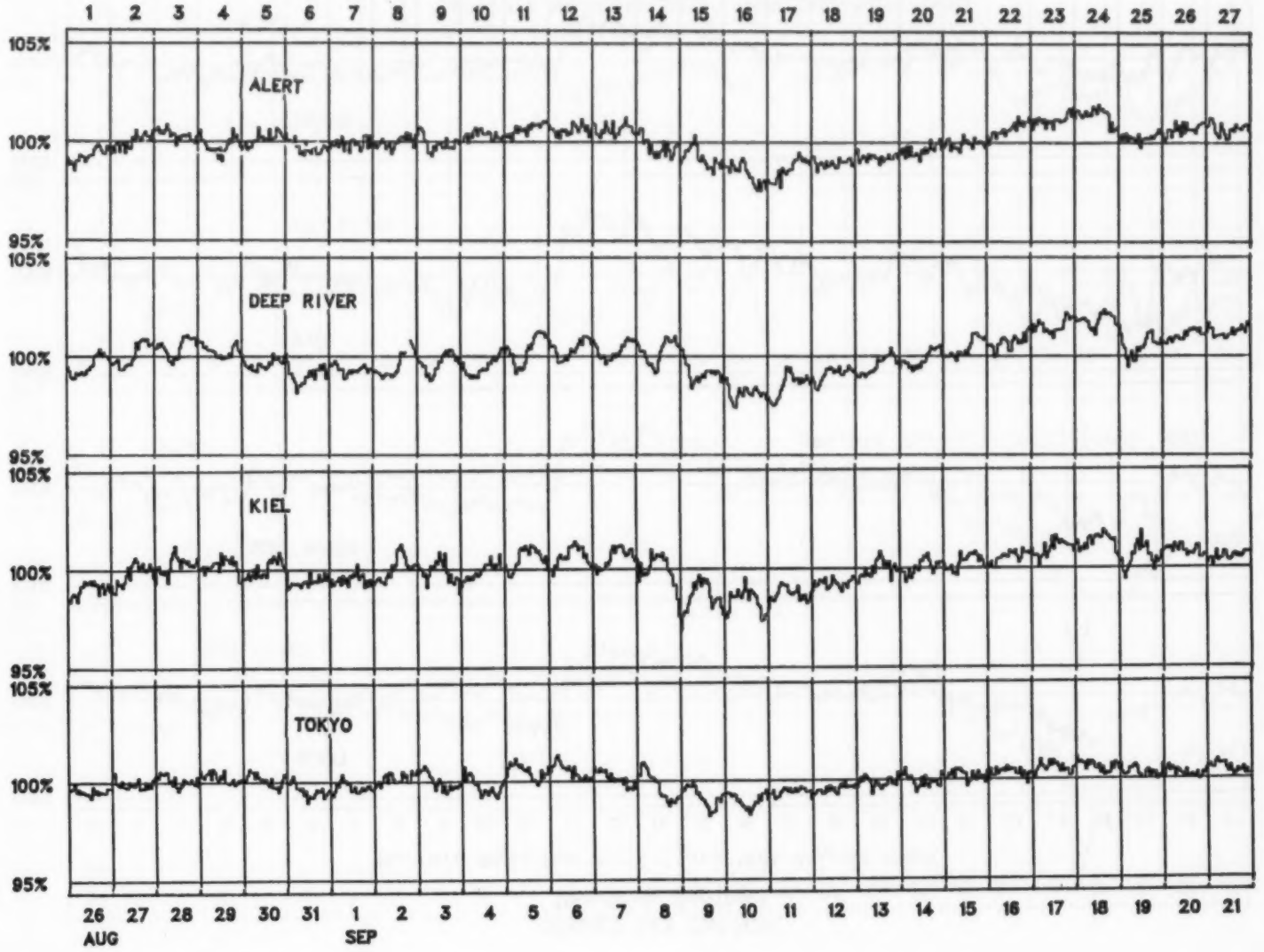
COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2023 (July 1981–August 1981)



COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2024 (August 1981–September 1981)



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